Sustainability Action Plan

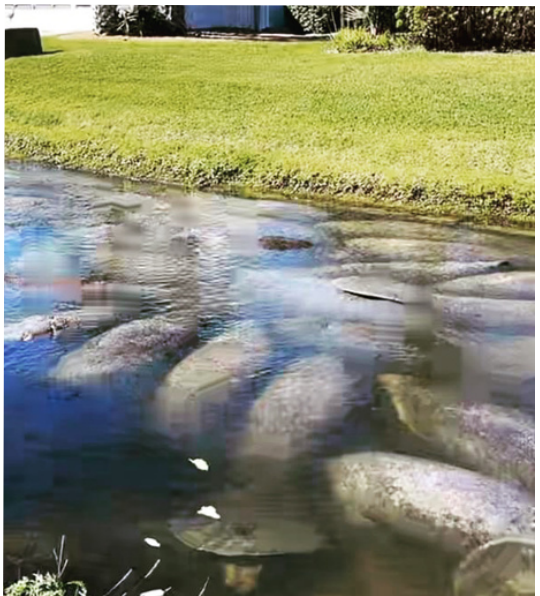
SUSTAINABLESATELLITE

2022 Version 2.0

5-Year Update of the City of Satellite Beach's Sustainability Action Plan

CITY OF SATELLITE BEACH


KEEP OUR WATERWAYS TANGLE-FREE; RECYCLE YOUR FISHING LINE RESPONSIBLY.



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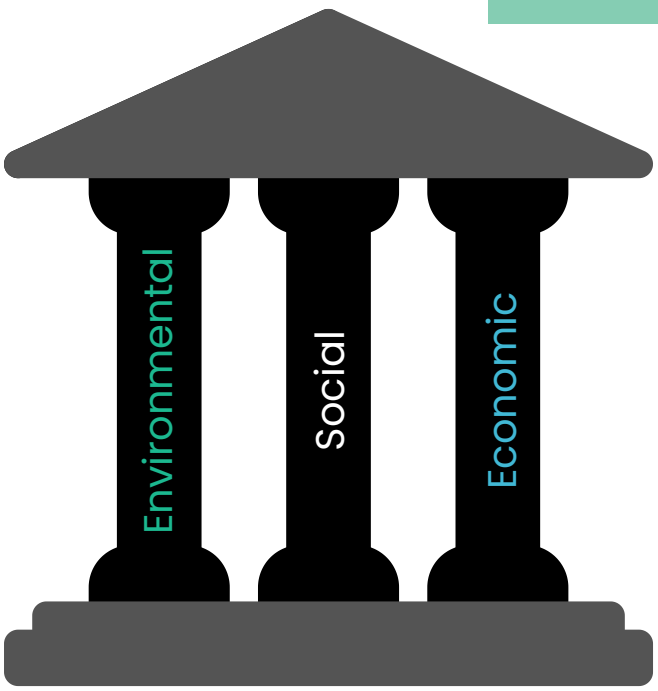
Introduction

Sustainability Defined

"Sustainability is broadly defined as the act of meeting the needs of the present without compromising the ability of future generations to meet their own needs" [1]. Sustainability is more than environmental stewardship. The term sustainability takes into account the environment, the well-being of the people, and the economy of a community (known as the three pillars of sustainability). In the past half a century, humans have developed a highly mechanized, energy-intensive, high throughput economy that is using up resources at a colossal pace. The result is an increase in costs of raw materials and destruction of environmental resources. However, these environmental resources that humans are degrading are silently providing "ecological services" (such as clean air and storm protection) free of charge [2]. The more these environmental resources are used up or destroyed, the lower the quality of life will be for humans. Further, if the destruction goes past the point of no return, the economic impacts can be astronomical. It is imperative for cities to consider sustainability in governance in order to keep community members healthy and happy, at a low cost, and while preserving the environment as much as possible.



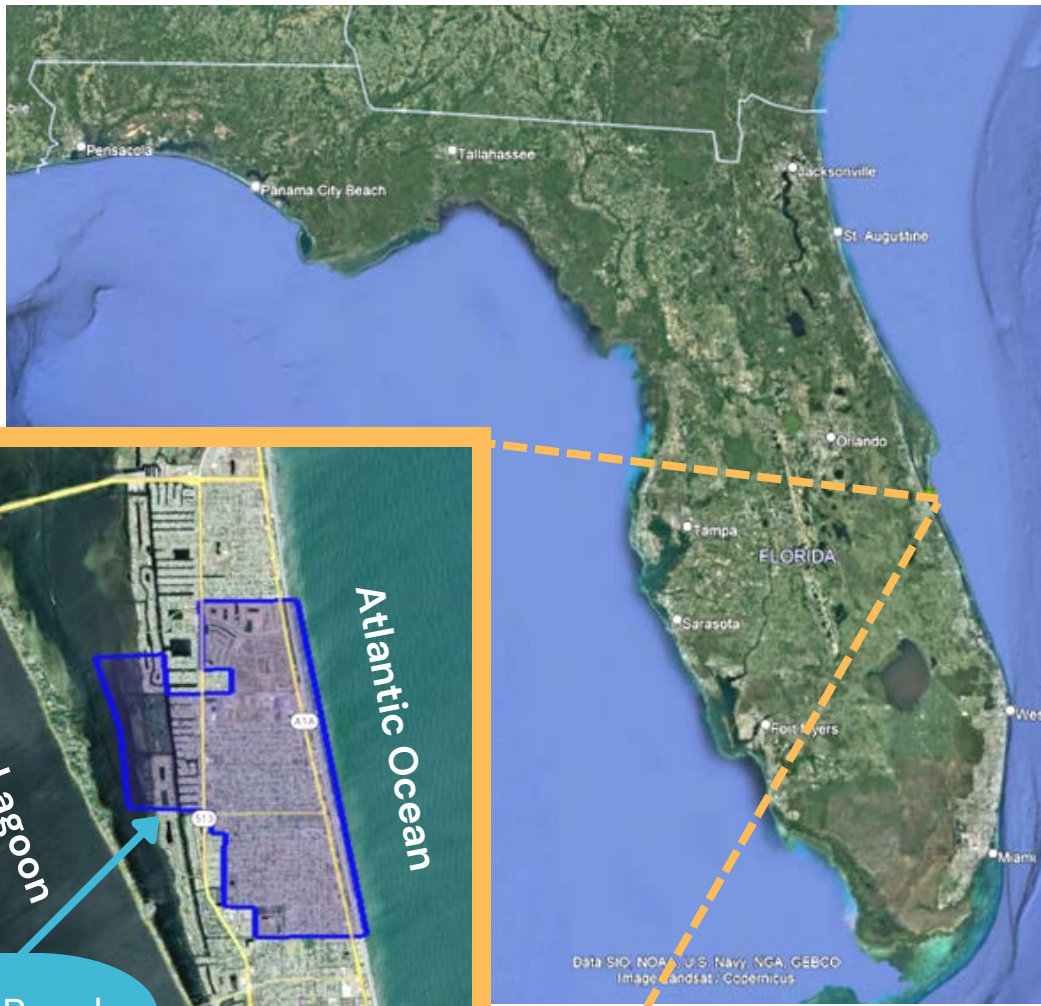
The role of local government in building a sustainable economy includes:

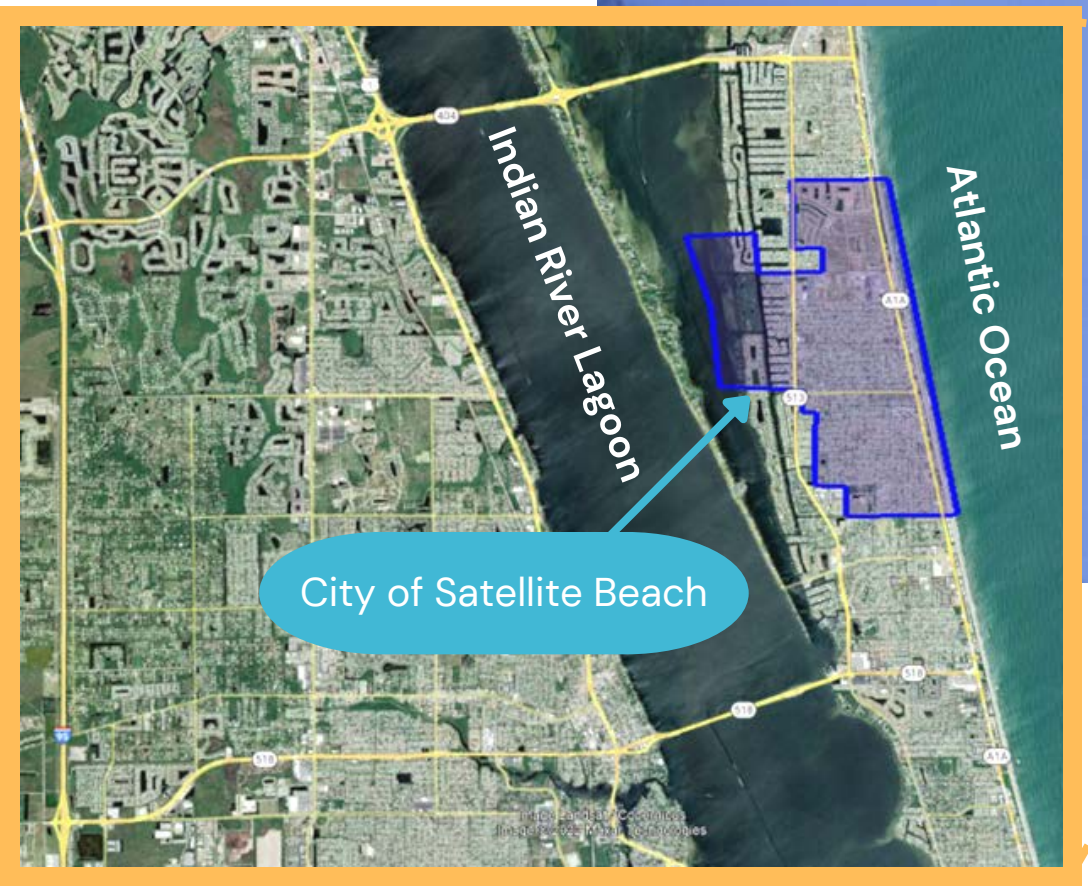
- Using government purchasing power to steer private capital toward investment in renewable energy and other sustainable technologies
- Investment in sustainability infrastructure such as smart grids, electric vehicle (EV) charging stations, mass transit, waste management facilities, water filtration systems, and sewage treatment systems
- Regulating land use and other private behaviors to minimize destruction of ecosystems
- Measuring society's progress toward sustainability by developing and maintaining a system of generally accepted sustainability metrics

About Satellite Beach

The City of Satellite Beach is a small city of 11,268 residents (as of 2021) and 2.92 square miles, located on the Space Coast, just several miles south of Cape Canaveral, in Brevard County. The City of Satellite Beach is on a barrier island, sandwiched between the Indian River Lagoon (IRL) and the Atlantic Ocean. Due to its amount of shoreline, elevation, and coastal placement, the city is threatened by coastal flooding, sea level rise, and increased frequency of extreme weather events such as hurricanes. Satellite Beach has been a leader in sustainability and environmental stewardship in Brevard County. Some initiatives include municipal ownership and public management for approximately 40% of the city's Atlantic beach coastline, designation of Samsons Island (a 52-acre dredge spoil site in the IRL) as a conservation area, a solar PV system on City Hall, multiple Electric Vehicle charging stations, and implementation of stormwater quality improvement projects.

In 2016, a Sustainability Board was created consisting of 7 volunteer resident-members that meets once a month and acts as directors in all the sustainability measures the city takes on. In addition to the board members, city-staff members help in the formulation of sustainability-related assessments and plans and are responsible for carrying out specific sustainability actions.





About Satellite Beach

11,226

Residents [3]

61.3%

Labor Force Participation Rate [3]

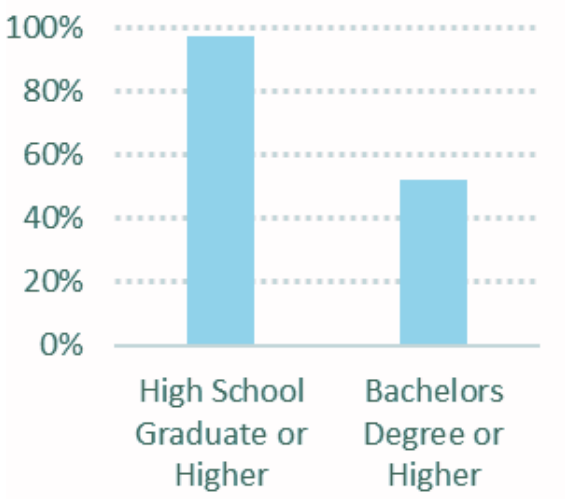
26.3

Average Commute (minutes) [3]

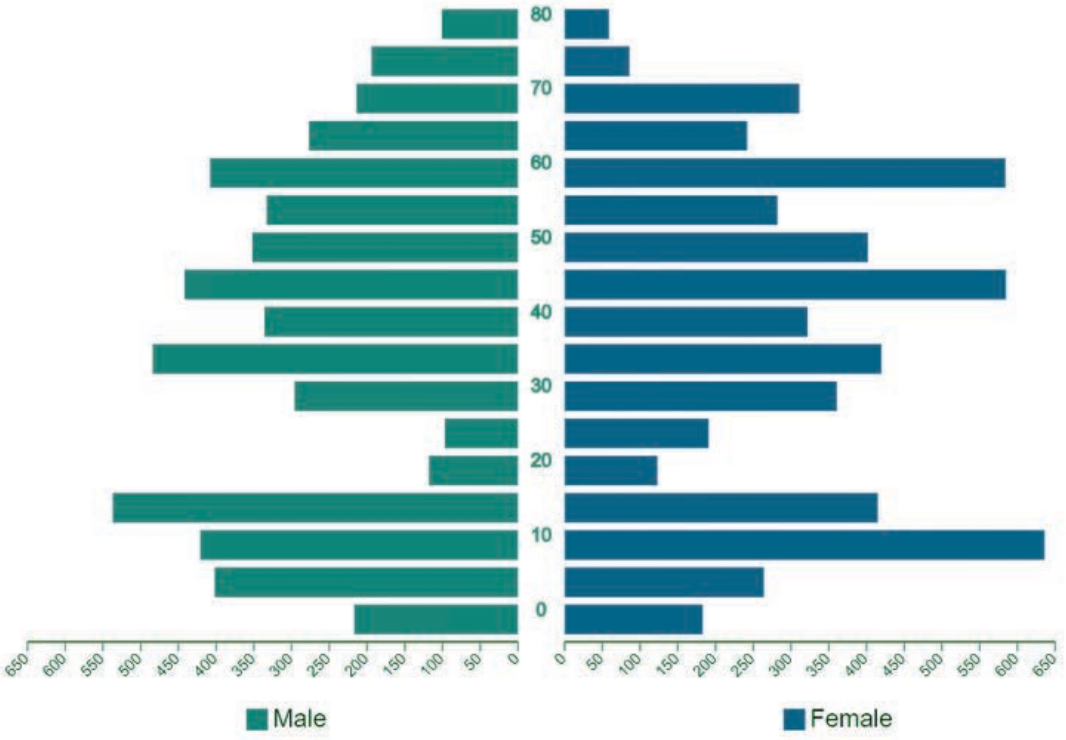
80.3%

Rate of Home Ownership [4]

Education [4]



Satellite Beach Population Pyramid 2020 [4]



42.9

Median Age

3.24

Average Family Size

2.74

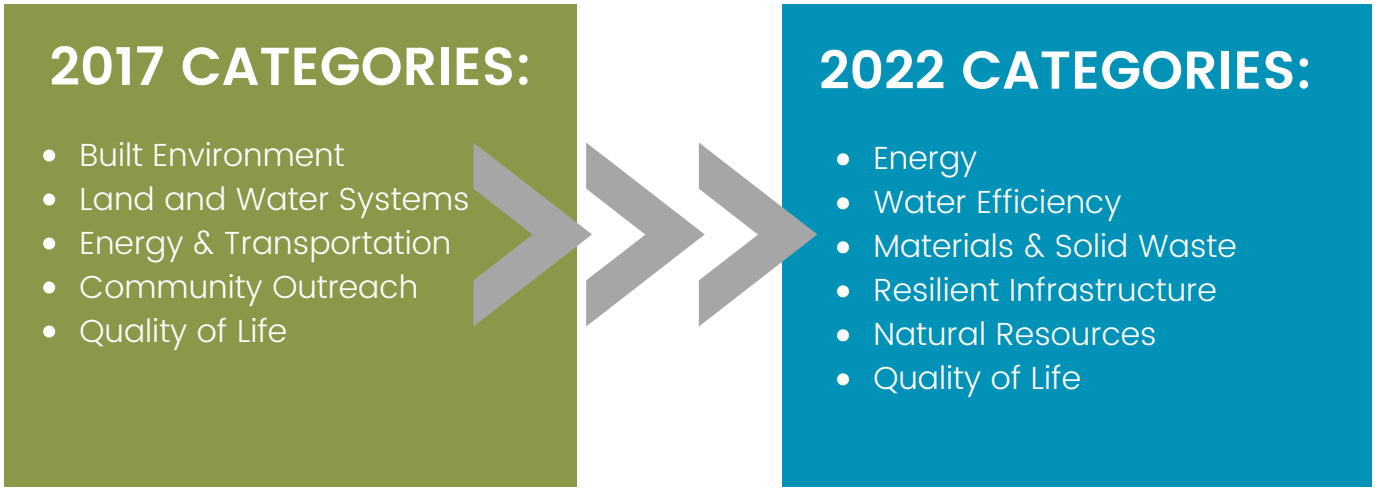
Average Household Size

Building on the 2017 Plan

In 2017, the City of Satellite Beach became one of the first cities in Brevard County to adopt a Sustainability Action Plan [1]. The City started this process by compiling a Sustainability Assessment Report that identified high priority indicators and measurements to be addressed in the sustainability program using five broad categories, listed below. The 2017 Plan established twenty targets (21 including one that was added later), collectively called the Green Achievement Targets (GATs). On the following page, you will find progress highlights the city has accomplished since the adoption of the 2017 plan, which could not have been achieved without the motivation that the plan provided.

This 2022 version of the Satellite Beach Sustainability Action Plan aims to build upon the foundation that was built in 2017. Categories were adjusted as can be seen below. Category changes include:

- **Built Environment** in the 2017 included things like open space, sustainable water sources, walkability, green building standards, and land use practices. This category was dissolved, and actions were split into more specific categories.
- **Land and Water Systems** essentially became the new category, **Natural Resources**, which also includes protection of flora and fauna.
- **Energy and Transportation** were split up, with **Energy** becoming its own category and transportation goals and actions being split between energy (i.e. electric vehicles) and **Quality of Life** (public transportation)
- The **Community Outreach** category was dissolved with the intention of building community outreach into each category.
- The category **Water Efficiency** was added to address the growing issue of water supply conservation.
- The category **Materials and Solid Waste** was added to address the issue of our growing waste stream.



Sustainability Highlights

Since the 2017 Sustainability Action Plan

Installed an 83 kW Solar PV System on City Hall (GAT 1)

Started a Community Garden (GAT 2)

Installed 3 EV charging stations (GAT 4)

Installed Xeriscaping at City Hall, Fire & Police Department and Community Center (GAT 5)

Purchased the City's first HEV (GAT 6)

Free Public Sustainability Workshops (GAT 7)

Sat Beach SLR Vulnerability Assessment (GAT 8)

Installed covered bus shelters with raised elevation (GAT 9)

Surveyed existing mangrove shoreline coverage (GAT 10)

Reduced city's single-use plastic and styrofoam purchases (GAT 12)

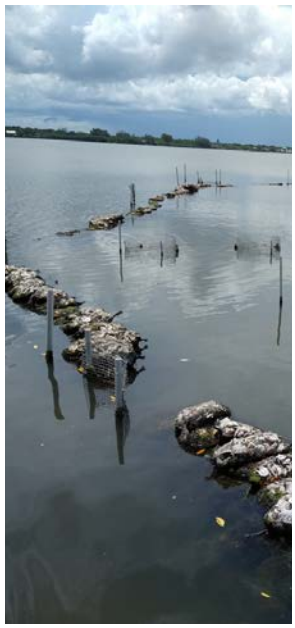
Sustainability Highlights

Since the 2017 Sustainability Action Plan

Achieved "Starry Sky" certification (GAT 13)

Converted all municipal building lighting to LED (GAT 14)

Coordinated regular beach & lagoon trash pickups (GAT 16)



Samsons Island Submerged Lands Restoration Project (GAT 18)

Implemented Soft Infrastructure (GAT 20)

Venturing outside the Plan

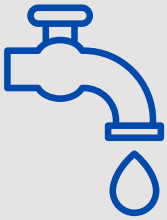
All the highlights listed above were specifically called out in the 2017 Sustainability Action Plan as Green Achievement Targets. Below is a non-exhaustive list of actions that were accomplished since the 2017 Sustainability Action Plan was published, but weren't necessarily mentioned in the plan:

- Created the T.R.E.E.S. Program, as part of a mission to plan 1,000 trees in Brevard
- Designed & implemented the DeSoto Stormwater Project, which includes 1.54-acre retention pond, 1,813 ft of trail, exercise equipment, kayak launch & education kiosks.
- Worked with FPL to host a 25-kW solar car canopy array at Pelican Beach
- Worked with FPL to convert all street lights along A1A to be "turtle friendly" amber lighting
- Started a recycle bin contamination audit program
- Implemented a sea-oat planting volunteer day at Hightower Beach
- Installed ADA-compliant beds at the community garden
- Started the Adopt-A-Canal program, designed to instill environmental stewardship into canal-front homeowners while improving water quality in a pilot canal
- Created a Department dedicated to sustainability: Department of Planning & Sustainability
- Partnered with Marine Teams to have a Fill-A-Bag station installed at Pelican Beach

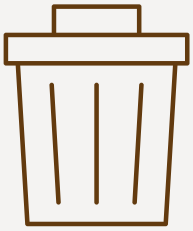
Executive Summary

The 2022 Sustainability Action Plan is to be used as a catalog of the City's past and proposed sustainability initiatives. It is meant to be a strategic document to guide the City's staff to allocate their time appropriately to address all aspects of sustainability. The document has been split up into 6 categories, each with equal importance to propelling the well-being of current and future Satellite Beach residents. Each category name, number, and symbol is dictated below. The symbols will be pictured on each page to signal which category is being discussed. Further, each category is correlated with a different color, which will be used throughout the entire category.

Category 1: Energy



Category 2: Water Efficiency



Category 3: Materials & Solid Waste

Category 4: Resilient Infrastructure

Category 5: Natural Resources

Category 6: Quality of Life

Executive Summary Continued...

Each category is divided into between two and four goals that the City aims to achieve. All 17 goals can be seen on the next page. Further, within each goal, several "Sustainability Actions" have been identified that can help propel the City towards reaching each goal. By adopting this Sustainability Action Plan, the City has committed to the goals listed in this document, but has not committed to every Sustainability Action. The Sustainability Actions are listed as possible routes to take to reach the 17 goals.

6 Categories >>> **17 Goals** >>> **99 Actions**

To develop this 5-year update, City Staff worked diligently with the Satellite Beach Sustainability Board to first develop the categories, then the goals, and then the actions. Further, to gain input from the Satellite Beach Community, several surveys were conducted to gain input on the 2022 Sustainability Goals. The roadmap on the following page shows a detailed timeline of events leading up to the adoption of the Plan.

Each Category will have the following outline:

- Category Overview
- List of Category Goals
- First Goal's Indicators (a more detailed indicator list can be found in the Appendix)
- First Goal's Actions
- Second Goal's Indicators
- Second Goal's Actions
- Etc.

Targets and Indicators

Some goals are qualitative, meaning there is a measurable target. Other goals are more quantitative, which may aim to achieve an "improvement" that cannot be measured with numbers. Although qualitative goals are harder to track, they are still important in improving the overall well-being of current and future residents. Each goal, regardless of whether it is quantitative or qualitative, will have at least one "indicator" which may help convey whether the goal is being met. For instance, Goal Q.3 is to create a more walkable / bikeable community. One indicator for this goal would be total distance of sidewalk in Satellite Beach.

Developing the 2022 Sustainability Action Plan

Jan - Feb 2022
Initial category selection with staff and Sustainability Board

Mar - Apr 2022
Goal selection with staff and Sustainability Board

April 2022
Goal selection survey available online and at Earth Day Event

April 2022
Action selection with staff and Sustainability Board for Category 1: Energy

May 2022
Action selection with staff and Sustainability Board for Category 2: Water Efficiency & Category 3: Materials & Solid Waste

June 2022
Action selection with staff and Sustainability Board for Category 4: Resilient Infrastructure

July 2022
Action selection with staff and Sustainability Board for Category 5: Natural Resources

August 2022
Action selection with staff and Sustainability Board for Category 6: Quality of Life

September 2022
Sustainability Board Final Approval of Sustainability Actions

Oct 2022 - Jan 2023
Survey about prioritizing sustainability actions available online

January 2023
City Council Approval of 2022 Sustainability Action Plan

Survey Results

A total of two surveys were conducted. An online community survey was posted during the month of April 2022 asking for input on the goal selection. This survey was also advertised in-person at the 2022 Earth Day event. This survey gave community-members the chance to provide input on the 2022 Sustainability Goals. There were 33 responses and the results can be seen below:

Satellite Beach Sustainability Action Plan Goal Selection - Public Survey Response				
Category	Goal	Voted Highest Priority	Voted Lowest Priority	Total Score
Energy	**Reduce city-wide energy consumption by 20% by 2050**	x		68
	Reduce city-wide diesel and gasoline consumption, including a reduction of diesel and gasoline in city-owned vehicles by 50% by 2040 and 100% by 2050			65
	Obtain 100% of electricity from clean, renewable sources city wide by 2050		x	64
Water Efficiency	**Reduce water consumption in city-owned infrastructure, including a reduction in publicly supplied potable water by 50% by 2040**	x		83
	Reduce the Satellite Beach Community's use of publicly supplied potable water by 50% by 2040		x	75
Materials & Solid Waste	Focus on source reduction to reduce total landfill contribution to less than 2 lb/person/day by 2030 and less than 1 lb/person/day by 2050. (2021 landfill rates are 2.47 lb/person/day)		x	60
	Achieve and maintain a recycling contamination rate of 20% or less by 2025			64
	Increase recycling diversion rates to at least 50% by 2030. This would mean 50% of what is being disposed of is getting recycled. In 2021, the average recycling diversion rate for Satellite Beach was 13.4%	x		71
Resilient Infrastructure	**Adapt city infrastructure to the impacts of climate change, including long-term sea level rise**	x		70
	Increase city's water retention footprint to reduce flooding events			62
	Investigate techniques to protect public and private interests from adverse impacts from long-term changes in sea level			62
Natural Resources	**Reduce Harmful Impacts to the Indian River Lagoon**	x		89
	Improve conservation of native flora and fauna		x	69
Quality of Life	Meet the critical needs of Satellite Beach Residents (this would include issues such as affordable housing, bus frequency, and programs for elderly, veterans, and homeless, but also account for every resident of SB)			58
	Invest in green spaces to reduce heat island effect, encourage outdoor activity, and beautify Satellite Beach			49
	Create a more walkable / Bikeable Community	x		60
	Create pathways to a more localized food system		x	31

The second survey was developed after all actions were drafted with the Sustainability Board. The goal of the second survey was to gauge citizen's expected participation level and desire for the Sustainability Actions in this Sustainability Action Plan. This survey was published online between October 2022 and January 2023 on Google Forms and was also provided in-person at the Ocean Reef Beach Festival in December 2022. As of December 30, 2022, there were 69 online responses and 44 responses at Ocean Reef Beach Festival.

Photo from citizens taking the second sustainability survey at Ocean Reef beach in December 2022, taken by Thea Baker

2022 Goals:

ENERGY

Goal E.1 - Reduce city-wide energy consumption by 20% by 2050
Goal E.2 - Reduce city-wide diesel and gasoline consumption, including a reduction of diesel and gasoline in city-owned vehicles by 50% by 2040 and 100% by 2050
Goal E.3 - Obtain 100% of electricity from clean, renewable sources city wide by 2050

WATER EFFICIENCY

Goal W.1 - Reduce water consumption on city-owned property, including a reduction in publicly supplied potable water by 50% by 2040
Goal W.2 - Reduce the Satellite Beach Community's use of publicly supplied potable water by 50% by 2040

MATERIALS & SOLID WASTE

Goal M.1 - Focus on source reduction to reduce total landfill contribution to less than 2 lb/person/day by 2030 & less than 1 lb/person/day by 2050
Goal M.2 - Achieve & maintain a recycling contamination rate of 20% or less by 2025
Goal M.3 - Increase recycling diversion rates to at least 50% by 2030

RESILIENT INFRASTRUCTURE

Goal R.1 - Adapt city infrastructure to the impacts of climate change, including long-term sea level rise, flooding, and storm events
Goal R.2 - Increase the City's water retention footprint to reduce flooding events and improve water quality
Goal R.3 - Investigate techniques to protect public and private interests from adverse impacts from long-term changes in sea level

NATURAL RESOURCES

Goal N.1 - Reduce Harmful Impacts to the Indian River Lagoon
Goal N.2 - Improve conservation of native flora and fauna

QUALITY OF LIFE

Goal Q.1 - Meet the critical needs of Satellite Beach residents
Goal Q.2 - Invest in green spaces to reduce heat island effect, encourage outdoor activity, and beautify Satellite Beach
Goal Q.3 - Create a more walkable / bikeable community
Goal Q.4 - Create pathways to a more localized food system

CATEGORY 1:

Energy

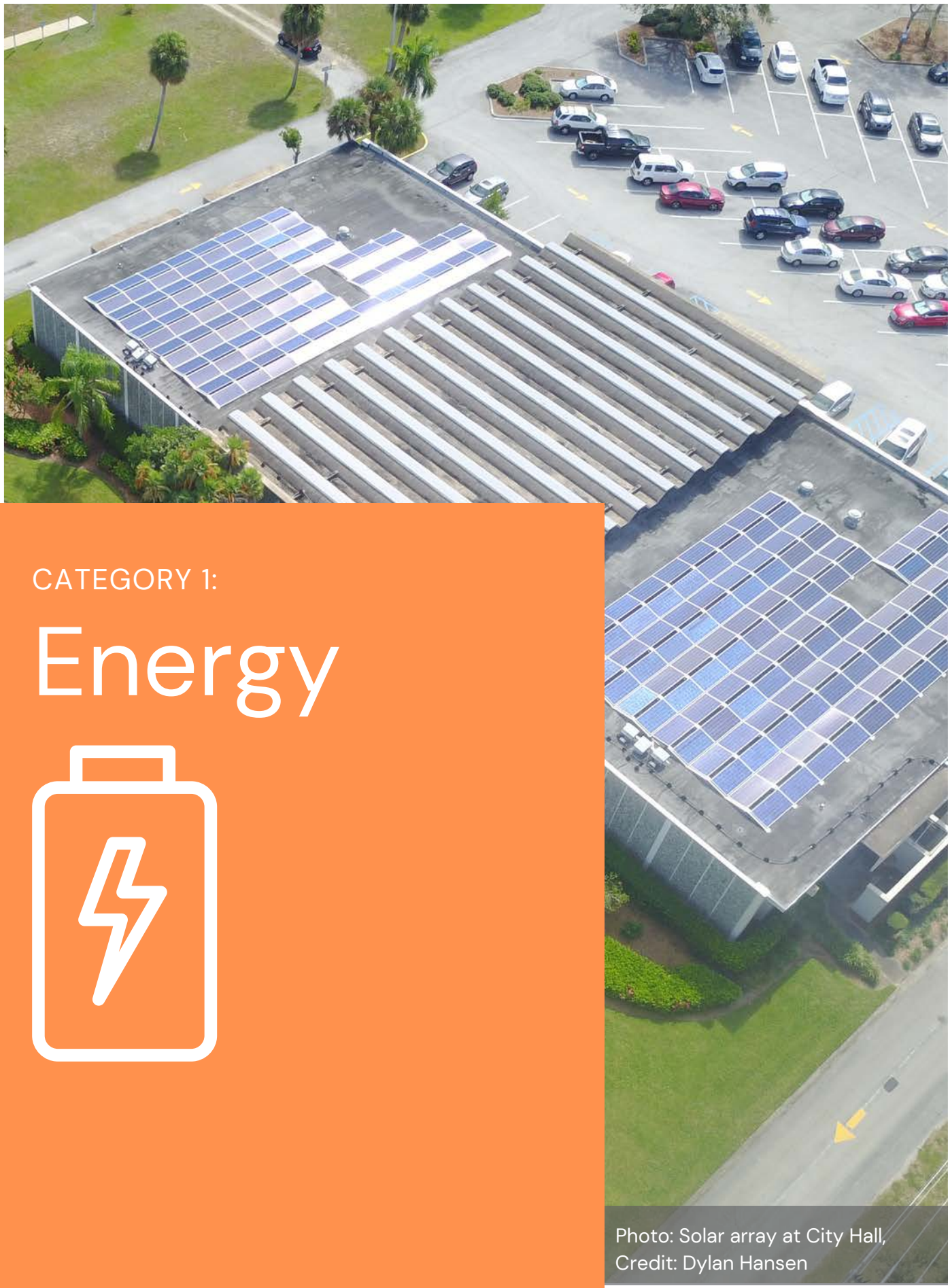


Photo: Solar array at City Hall, Credit: Dylan Hansen

Category 1: Energy

Greenhouse gases in the atmosphere are increasing due to natural climatic cycles, and are increasing more rapidly than typical, due to human activity. Global temperatures have risen by 0.8 degrees Celsius since 1750 and are expected to increase another 0.6 degrees in the next couple of decades, which will have dangerous climate impacts on the world.

The City of Satellite Beach is no stranger to the effects of a changing climate. As a coastal and barrier island community, threats of Sea Level Rise bear heavy on the future of Satellite Beach residents. Further, hurricanes are expected to become more frequent and intense, and the city will need to be prepared. In addition to preparation, Satellite beach recognizes that the city must do its part in reducing green house gas emissions in hopes of slowing down the effects of climate change. Stabilization of the global climate is an urgent matter that requires immediate and effective response. Continuing "business as usual" even for a few more years will greatly increase the risk of irreversible climate change.

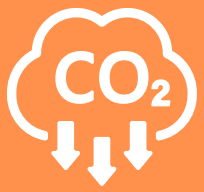
Satellite Beach is committing to actions that will address both the causes and effects of climate change.

With goals to decrease overall energy consumption, reduce gasoline and diesel consumption, and to obtain 100% of the city's energy from clean, renewable energy by 2050, the City of Satellite Beach aims to reduce its greenhouse gas emissions footprint. In addition to emissions reductions, a transition to more energy-efficiency and energy sourced from clean, renewable sources leads to economic benefits including reduced energy costs and job creation. As outlined to the right, quality of life benefits can be seen including cleaner air due to less vehicle exhaust, and the possibility of energy autonomy during storm events. The City hopes to lead by example not just within the Satellite Beach community, but within the entire Space Coast area.

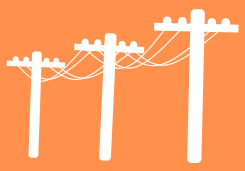
Job Creation

Reduced Energy Costs

Reduced Greenhouse Gas Emissions



Energy Autonomy



Cleaner Air

Our 2022 Goals

E.1

Reduce city-wide energy consumption by 20% by 2050

This goal covers all buildings and infrastructure that consumes electricity, natural gas, and any other fuel sources. This includes government-owned infrastructure, and commercial and residential properties. Methods to reduce consumption may include reducing overall energy demand (i.e. using daylight for lighting demands or increasing reflectivity of roofs for less AC) and increasing energy efficiency (i.e. converting to LED lighting, energy-efficient appliance upgrades).

E.2

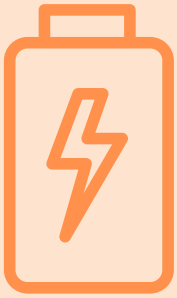
Reduce city-wide diesel and gasoline consumption, including a reduction of diesel and gasoline in city-owned vehicles by 50% by 2040 and 100% by 2050

The purpose of this goal is to reduce the amount of fossil fuels required for transportation in Satellite Beach. This involves promoting vehicles that are more fuel-efficient, vehicles that use alternative fuel sources, and avoiding the car altogether (promoting public transportation, biking, walking, golf carts, scooters, etc).

E.3

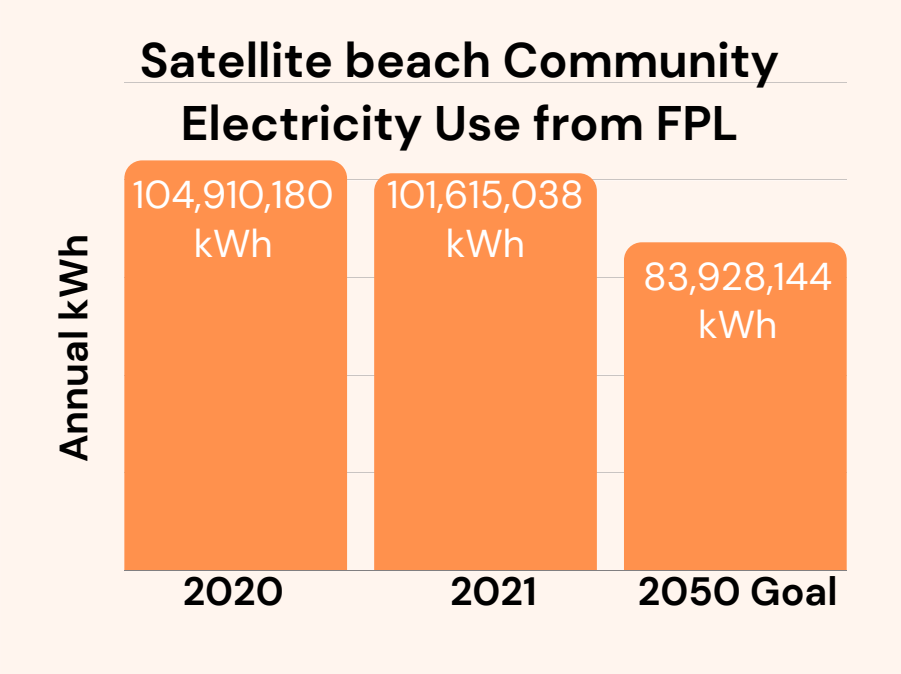
Obtain 100% of electricity from clean, renewable sources city wide by 2050

This goal covers all buildings and infrastructure that consumes electricity, natural gas, and any other fuel sources and aims at ensuring such fuel sources are clean and renewable. This includes government-owned infrastructure, commercial buildings, and residential buildings. Methods to convert to renewable energy include direct harvest of renewable energy (Solar PV), storing energy, purchasing carbon credits, and ensuring energy providers use renewable energy.

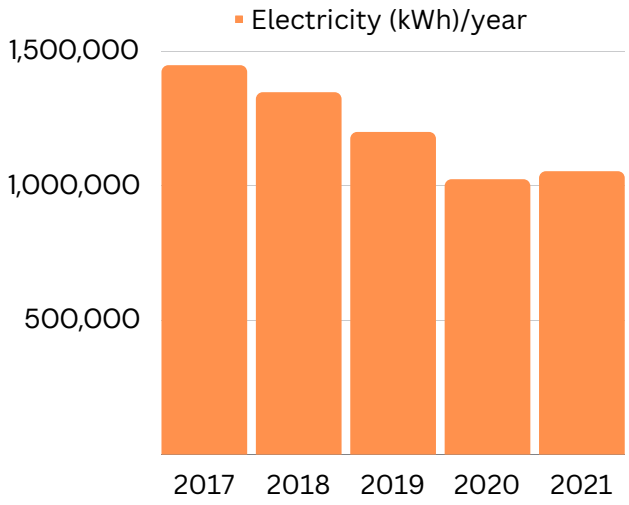


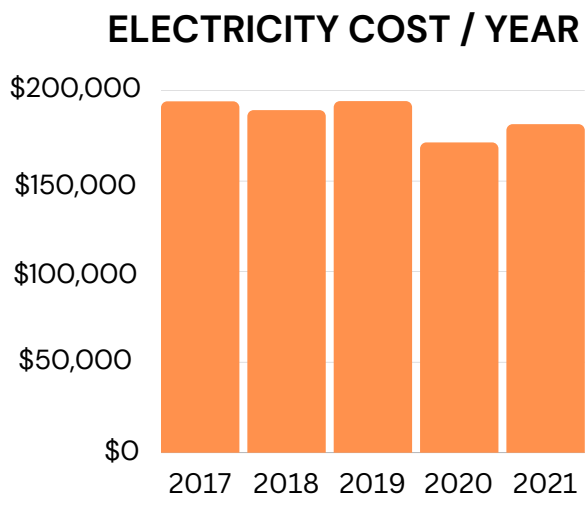
Goal E.1 Reduce city-wide energy consumption by 20% by 2050

Indicators



Municipal Operations





Goal E.1: Reduce city-wide energy consumption by 20% by 2050

Sustainability Action E.1.1 Analyze and document energy efficiencies that the city has already completed and dictate what the electricity and cost reduction was.

Previous Progress:
In 2019, ABM Contracting was contracted out to perform a lighting audit and to replace all municipal building lighting with longer-lasting LED lighting. ABM also added solar LED lights to DeSoto Stormwater Park. This was all due to the City's 2017 Sustainability Action Plan, GAT #14, which was: Convert all municipal building lighting (both interior and exterior) to more efficient and longer-lasting LED lighting.
Description:
The City will review the work completed by ABM Contracting involving energy efficiencies. Electricity data, including cost and kWh/month, will be reviewed for each municipal building that underwent energy efficiency renovations. Staff will create a presentation to show to City Council and to the Public to show the cost of the renovations versus the cost savings since the renovations.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Staff Time ~20 hours	Year 1

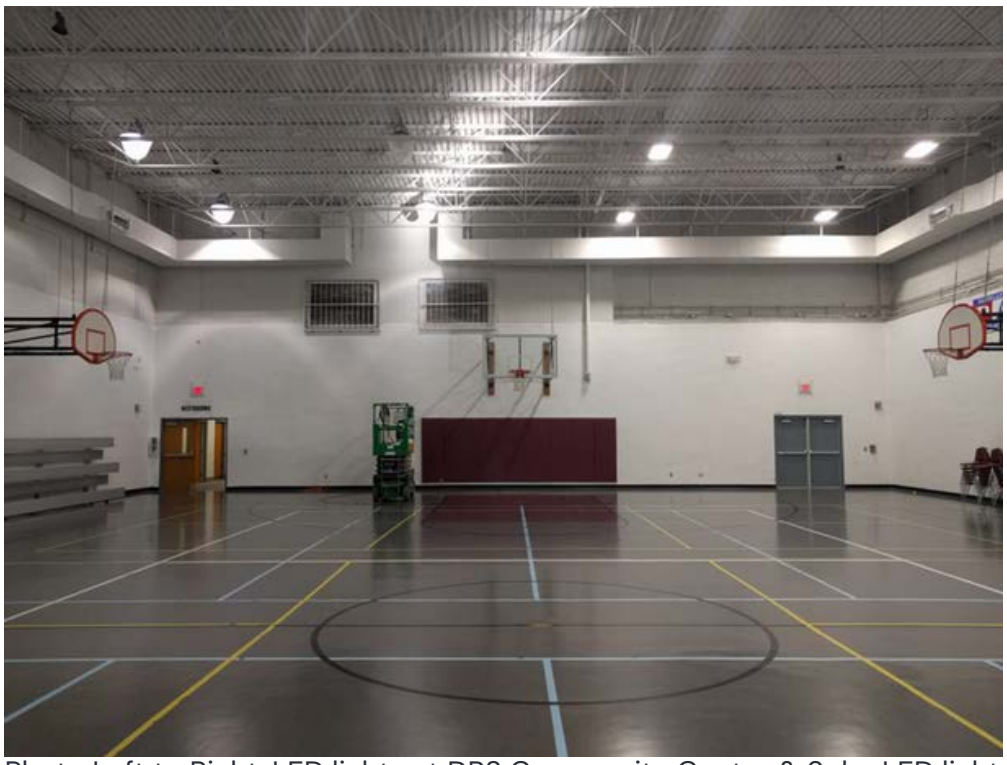


Photo Left to Right: LED lights at DRS Community Center & Solar LED lights at DeSoto Park

Goal E.1: Reduce city-wide energy consumption by 20% by 2050

Sustainability Action E.1.2 Perform a city-wide greenhouse gas emissions inventory.

Previous Progress:

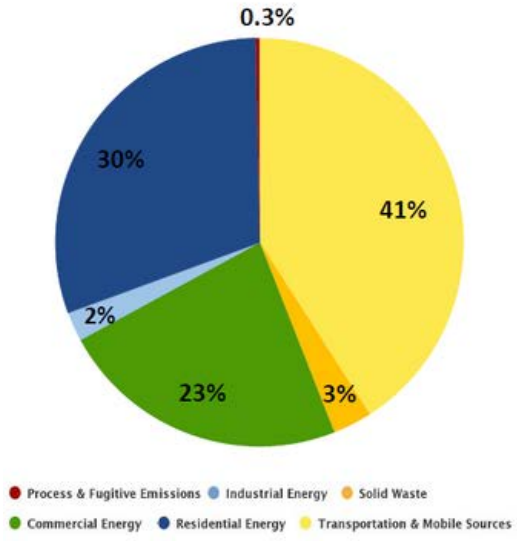
The East Central Florida Regional Resilience Collaborative (ECFRRC) has already collected greenhouse gas (GHG) emissions data for the East Central Florida Region. As part of this collaborative, data from Satellite beach regarding GHG emissions has already been collected.

Description:

Using the data that the ECFRRC has already collected, City staff will formulate a report showing the status of GHG emissions within the Satellite Beach boundary and how these emissions are split up by sector. This will be displayed in a manner similar to the region-wide emissions report shown below.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Staff Time ~80 hours	Year 1

Region-wide CO_2e Emissions by Sector



Sector	Fuel or Source	Usage	Usage Units	Emissions
Residential Energy	Electricity	34,427,810,716	kWh	13,614,601
Residential Energy	Natural Gas	115,659,468	Therms	615,152
Residential Energy	Other			- 1.00
Residential Energy Total				**14,229,752**
Commercial Energy	Electricity	18,805,061,817	kWh	7,459,391
Commercial Energy	Natural Gas	632,445,810	Therms	3,363,758
Commercial Energy	Other			- 1.00
Commercial Energy Total				**10,823,148**
Industrial Energy	Electricity	1,982,070,536	kWh	803,415
Industrial Energy	Natural Gas	55,068,997	Therms	292,276
Industrial Energy	Other			- 2.00
Industrial Energy Total				**1,095,689**
Transportation & Mobile Sources	Gasoline	33,329,031,223	VMT	13,908,992
Transportation & Mobile Sources	Diesel	3,555,686,820	VMT	5,251,678
Transportation & Mobile Sources	Other			61,503
Transportation & Mobile Sources Total				**19,222,173**
Solid Waste	Waste Sent to Landfill	5,504,141	Tons	1,431,041
Solid Waste	Waste Sent to Incinerator	156,413	Short Tons	542
Solid Waste	Other			27,070
Solid Waste Total				**1,458,653**
Process & Fugitive Emissions	Other			139,346
Process & Fugitive Emissions Total				**139,346**
TOTAL EMISSIONS				**46,968,761**

Goal E.1: Reduce city-wide energy consumption by 20% by 2050

Sustainability Action E.1.3 Create a resolution in city council to make October Energy Awareness Month.

Previous Progress:
Each year, the U.S. Department of Energy designates October as Energy Awareness Month. In 2019, October 2, 2019 was established by Satellite Beach City Council as Energy Efficiency Day.
Description:
This action would involve establishing October as Energy Awareness Month each year. During this month, the Department of Planning & Sustainability will focus their efforts on raising awareness about energy efficiency. An incentive program for residential energy efficiency upgrades will be established and reevaluated each year during this month. Other outreach efforts will commence in this month including potentially working with schools to recognize this month and to develop energy efficiency curriculum, social media campaigns, and energy efficiency challenges.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Staff Time ~160 hours	Annually

Sustainability Action E.1.4 Analyze how City Building Code compares to the International Green Construction Code and consider revising City Code to match.

Previous Progress:
The 2018 International Green Construction Code (IgCC) [6] provides the design and construction industry with the single, most effective way to deliver sustainable, resilient, high-performance buildings. The goal of the 2018 IgCC is to provide fundamental criteria for energy efficiency, resource conservation, water safety, land use, site development, indoor environmental quality and building performance that can be adopted broadly.
Description:
By analyzing and revising the City's Building Code to match the IgCC, the City can assure that not only municipal buildings are built and remodeled with strategies that reinforce societal health/life/ safety benefits, but all buildings within the City are built to be resilient as well.
Reference: Overview of the International Green Construction Code

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Building / Planning & Sustainability	Staff Time ~100 hours	Year 3

Goal E.1: Reduce city-wide energy consumption by 20% by 2050

Sustainability Action E.1.5 Create a platform for commercial entities to disclose energy information and submit energy efficiency goals.

Description:
In order to encourage businesses in Satellite Beach to focus on electricity reduction, the City will create a platform where businesses can disclose their electricity usage. If a business elects to participate, each business will be asked to set an energy reduction goal and if they meet their goal, the CIty will consider monetary incentives such as waiving permitting and fire inspection fees. The first step to saving electricity is to benchmark, and to compare similar building data to each other. The U.S. EPA's Energy Star Portfolio is a free tool for almost any type of property to rate how they compare to similar buildings.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Unknown	Year 2

Case Study: Seattle's Energy Benchmarking Map [7]
Under Seattle's Energy Benchmarking Law, the City requires buildings over a certain size, and encourages buildings of all size to disclose their energy information. Seattle then shares this data with the public annually. This transparency helped drive the energy efficiency market, resulting in an emissions reduction of 4.8% and an increase in Median Energy Star score for reporting hospitals from 60 to 95 between 2015 and 2020.

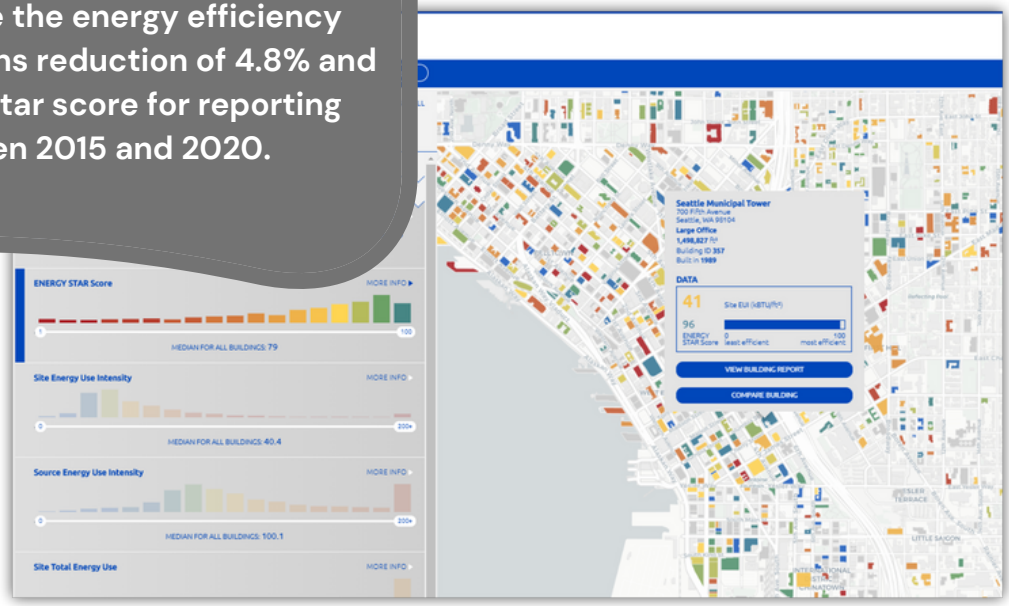


Photo retrieved from https://www.seattle.gov/environment/climate-change/buildings-and-energy/energy-benchmarking/data-and-reports

Goal E.1: Reduce city-wide energy consumption by 20% by 2050

Sustainability Action E.1.6 Provide assistance for commercial building owners to perform energy audits and energy efficiency retrofits.

Previous Progress:
The property assessed clean energy (PACE) model is an innovative mechanism for financing energy efficiency and renewable energy improvements on private property. PACE programs exist for commercial and residential properties.
Description:
This will involve working directly with at least one commercial building owner every five years to implement energy efficiency retrofits, increasing awareness of commercial building owners about PACE funding opportunities, and search for grant or outside-sourced funding opportunities at least once a year.
Reference: Property Assessed Clean Energy (PACE) Programs [8]

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Staff Time ~80 hours	Year 2

Sustainability Action E.1.7 Explore adjustments to municipal office operations that may reduce electricity consumption.

Description:
Adjustments to municipal office operations may include transitioning to an expanded service hours work week. Under this model work schedules shift from a 5-day week to a 4-day week. During those 4 days, the hours of service provided are extended, providing a greater window of access to citizens. Expanded service hours allows the City to meet or exceed current levels of service, while realizing significant savings in operational expenses and increases in employee satisfaction. The City of Hallendale is considering this transition, after 13 other South Florida cities have made the transition. Extensive outreach to residents and businesses will be necessary to increase awareness of potential changes to City hours of operation. Hollywood, FL and Miramar, FL each made the transition and have realized about $460,000 and $410,000 respectively in cost savings per year due to avoided water, electricity, fuel, over time and sick leave usage.
Reference: City of Hallandale Sustainability Action Plan [9]

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Building / Planning & Sustainability	Free (Expected cost savings	Year 3

Goal E.2

Reduce city-wide diesel and gasoline consumption, including a reduction of diesel and gasoline in city-owned vehicles by 50% by 2040 and 100% by 2050

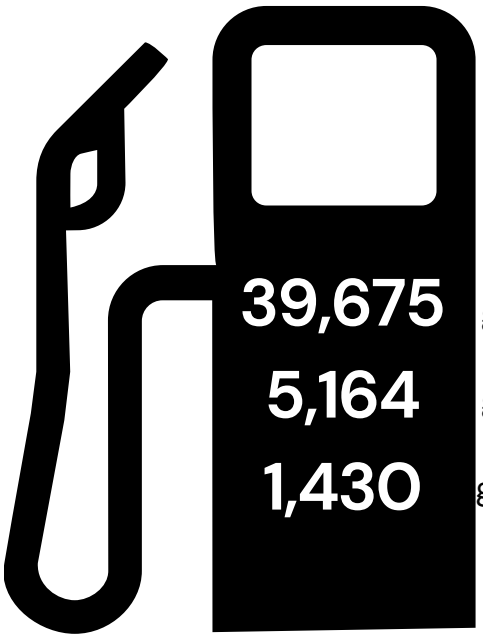
Indicators

Satellite Beach - 2019	
VEHICLE MILES TRAVELED Gasoline	80,704,848
VEHICLE MILES TRAVELED Diesel	8,358,438

Municipal Operations (2021 Baseline)

Other Metrics to be collected in 2023-2026:

- Gallons of fuel purchased within Satellite Beach City Limits
- Vehicle Miles Traveled (VMT) for municipal vehicles



gallons of unleaded fuel purchased

gallons of diesel fuel purchased

gallons of non-ethanol fuel purchased

Goal E.2: Reduce city-wide diesel and gasoline consumption, including a reduction of diesel and gasoline in city-owned vehicles by 50% by 2040 and 100% by 2050

Sustainability Action E.2.1 Convert all city-owned administrative vehicles to alternative fuel options by 2040.

Previous Progress:
The City currently has 67 vehicles in the municipal fleet. This includes 30 police vehicles, 4 fire trucks, and 8 administrative vehicles. The City purchased its first plug-in hybrid vehicle, a 2015 Chevy Volt in 2018 and has since then leased or purchased 3 hybrid vehicles.
Description:
The City will look at first right-sizing it's fleet to ensure only vehicles that are truly necessary are purchased. Then the City will evaluate electric options as the City replaces each administrative vehicle. Administrative vehicles are those vehicles for transporting staff only and not used for operational work. As more electric vehicles join the market, more electric vehicles will be purchased and/or leased. In addition to administrative vehicles, staff will consider alternative fuel options for all vehicles during the replacement period.

Status	Responsible Department	Cost	Timeframe
In Progress	Public Works	Staff Time ~80 hours	Years 1-5

Sustainability Action E.2.2 Increase number of EV charging stations through regulatory action.

Description:
The City will pursue implementing an Electric Vehicle Readiness Code similar to the City of Orlando's (2021). This will apply to new development or substantial enlargement of structures require 2% of parking spaces to be equipped with EV charging stations and 10-20% of parking spaces to be built "EV Capable", with dedicated capacity in the electrical panel and conduit running to future EV charging spaces. This will be for multifamily, hotel, commercial, and industrial properties.
Reference: Orlando's Electric Vehicle Readiness Code [10]

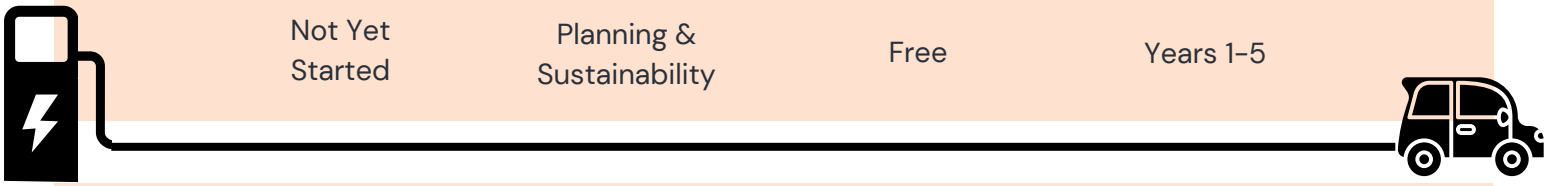
Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 1

Goal E.2: Reduce city-wide diesel and gasoline consumption, including a reduction of diesel and gasoline in city-owned vehicles by 50% by 2040 and 100% by 2050

Sustainability Action E.2.3 Advocate to Space Coast Area Transit to transition to electric buses.

Previous Progress:
·The Space Coast Area Transit (SCAT) bus system services Satellite Beach and has 8 stops along A1A. The bus system provides transportation options from the City, up north to Cocoa Beach, and down south to Indian Harbour Beach.
Description:
The City will host regular meetings with Space Coast Area Transit to explain the City's cooperation if SCAT were to transition to electric alternatives.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Years 1-5



Sustainability Action E.2.4 Establish golfcart-only parking spots at beaches.

Description:
When beach parking lots are scheduled for resurfacing, the City will determine how to fit in golf-cart only parking spots at the beach parking lots. This will only be implemented if in compliance with all laws and regulations. Golf cart only parking spaces are intended to encourage visitors to choose a smaller-electric option over a less efficient counterpart.

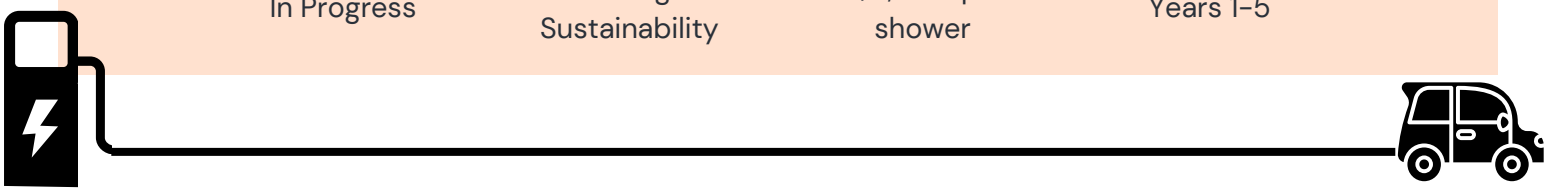
Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works	Free	Years 3-5

Goal E.2: Reduce city-wide diesel and gasoline consumption, including a reduction of diesel and gasoline in city-owned vehicles by 50% by 2040 and 100% by 2050

Sustainability Action E.2.5 By 2035, install showers at every municipal building to facilitate biking to work.

Description:
Currently the fire station, police station, and new Public Works building all have showers. Each new building or remodel of existing buildings will involve the addition of at least one shower per building. This will help each building become LEED-equivalent which gives points for buildings with showers to facilitate biking to work.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	<$5,000 per shower	Years 1-5



Sustainability Action E.2.6 Establish May as Mobility Month.

Description:
A City Council resolution will establish May as a Mobility Month, where residents are encouraged to walk or bike to work, school, errands, or recreation. This may involve working with schools, the Youth Council, the Space Coast Transportation Planning Organization (SCTPO), and/or other cities. This will also involve heavy public outreach such as creating a social media campaign where residents can enter a drawing by posting a photo of themselves on social media biking to work with the hashtag, #BiketoWorkSatelliteBeach. The winner will be drawn at random at the end of the month and will win a prize. Residents can enter as much as once per day. The campaign would help spread awareness about reducing vehicle emissions.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	City Clerk / Planning & Sustainability	Free	Years 1-5

Goal E.2: Reduce city-wide diesel and gasoline consumption, including a reduction of diesel and gasoline in city-owned vehicles by 50% by 2040 and 100% by 2050

Sustainability Action E.2.7 Consider alternative fuel options for all small equipment during replacement.

Description:
Every year small Public Works equipment needs to be replaced due to equipment breaking or becoming obsolete. This small equipment includes leaf blowers, edgers, other lawncare equipment, light towers, generators, and more. Gasoline-powered lawn and garden equipment is a significant source of high levels of localized emissions that includes hazardous air pollutants, criteria pollutants, and carbon dioxide (CO2). Each year, when small equipment is up for replacement, whether due to obsolescence or disrepair, alternative fuel options for each piece of equipment will be considered. If electric versions of the equipment are able to provide enough power to do an adequate job, electric versions will be chosen over gas-powered equivalents.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Building / Planning & Sustainability	Free (expected cost savings)	Year 3

Goal E.3

Obtain 100% of electricity from clean, renewable sources city wide by 2050

Indicators

221,919 MWh

Potential annual energy generated if solar panels were placed on every viable rooftop in Satellite Beach.

101,615 MWh

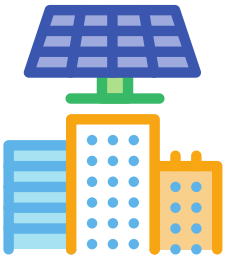
Annual electricity consumed through Florida Power & Light (FPL) in 2021 by Satellite Beach Community.

4.1%

Percent of residential properties within City limits with rooftop solar installed

11.2%

Percent of Municipal operations powered by Satellite Beach renewable energy in 2020



108 kW

Total installed solar capacity for municipal properties

417 kW

Total amount of solar energy production the City is subscribed to through FPL's Solar Together Program

Other Metrics to be collected in 2023-2026:

- % of municipal operations powered by total solar, including FPL solar together subscription
- Annual kWh produced due to FPL's solar together program

Goal E.3: Obtain 100% of electricity from clean, renewable sources city wide by 2050

Sustainability Action E.3.1 All new municipal buildings to be retrofitted with solar & after city structures have undergone energy efficiencies and roof replacements, convert all feasible city structures to solar by 2035.

Previous Progress:
In 2018, Satellite Beach invested $160,000 to install a 83 DC kilowatt Solar Photovoltaic (PV) system on the City Hall Building. The solar array features a fully ballasted SunPower Helix system, that involved zero roof penetrations and is designed to meet 170 mph wind loads. This included 232 panels to power the 5,000 square foot building. In 2019 through 2021, City Hall saved an average of $7,561/year which will result in a payback period of 21 years. In addition to cost savings, this project has produced an average savings of 116,143 kWh of electricity/year when working properly, reducing 82 mT of CO2 from the atmosphere every year. This is equivalent to removing 18 gasoline-powered vehicles from roads every year or the amount of carbon sequestered by 97 acres of U.S. forests per year [11].


Photo: Solar array at City Hall, Credit: Dylan Hansen

Description:
The city will ensure all new builds are retrofitted with solar PV systems during the construction phase. A new Public Works (PW) building is being built in 2022 – 2023, which will be retrofitted with solar PV. This building will eventually house the Fire Department (FD) as well. Further, each time a municipal building roof is up for replacement, it will be assessed for solar PV installation. Remaining municipal buildings include the Police Station (PS) and the Dave R. Schechter Community Center (CC). Each rooftop that can accommodate solar panels will undergo solar PV installation during rooftop replacements.

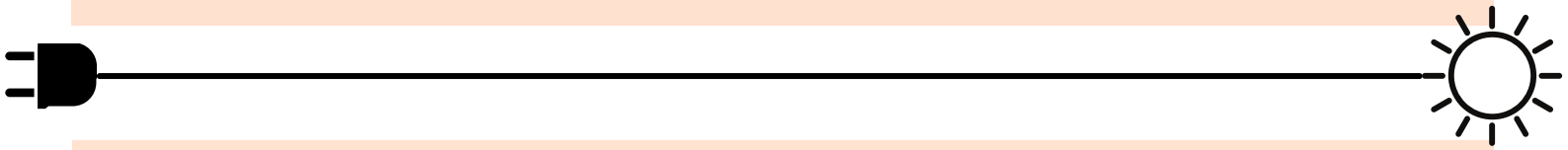
Status	Responsible Department	Cost	Timeframe
Ongoing	Public Works	$80,000 - $200,000 per building	<5 Years - PW & FD 10-20 Years - PS & CC

Goal E.3: Obtain 100% of electricity from clean, renewable sources city wide by 2050

Sustainability Action E.3.2 Submit articles in BeachCaster twice a year about solar programs in the area.

Description:
The City of Satellite Beach newsletter, the BeachCaster, is mailed out to every resident 4 times a year. In an effort to keep residents up to date on all rooftop solar programs in the area, an article will be published twice a year about any relevant solar programs. These may include federal, state, or local incentives, policy changes, or funding opportunities.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Staff Time ~80 hours	Year 2



Sustainability Action E.3.3 Create an online database & interactive map where residents and business owners can indicate their solar panels.

Previous Progress:
As of September 2022, 205 rooftop solar installations were installed in Satellite Beach on residential or commercial properties. Using permit data, a spreadsheet of all rooftop solar installations in Satellite Beach has been created and will be kept up with.

Description:
Using the aforementioned rooftop solar spreadsheet, an interactive map will be created for residents and business owners to see where rooftop solar installations have occurred within Satellite Beach. The database will compile as much data as possible including system size, costs, and actual savings. The goal of the database is to share as much real and local data as possible about rooftop solar to residents to ease any concerns about going solar and to also connect prospective solar residents with residents who have gone through installation already.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Building / Planning & Sustainability	Free (expected cost savings)	Year 3

Goal E.3: Obtain 100% of electricity from clean, renewable sources city wide by 2050

Sustainability Action E.3.4 Partner with at least one city commercial entity every 5 years to help with rooftop solar.

Description:
At least once every five years, City staff will initiate a collaboration between the City and a commercial entity to help them research and build a solar installation that either partially or fully powers their business. Staff will first perform outreach to local business owners to determine likelihood to participate. This may involve workshops, surveys, or door-to-door conversations. Commercial entities will be encouraged to use C-PACE Program for funding. Commercial property assessed clean energy (C-PACE) [12] is a tool that can finance energy efficiency and renewable energy improvements on commercial property.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Staff Time ~80 hours	Year 2

Sustainability Action E.3.5 Partner with other municipal governments and/or entities such as Solar United Neighbors to advocate for state policy to allow Power Purchase Agreements (PPAs).

Description:
With a PPA, a PV system is installed on a customer's property, while a third-party developer owns, operates, and maintains the system. Florida is one of only four states that prohibits citizens from buying electricity from anyone other than a utility, therefore disallowing PPAs. PPAs could support up to 25,799 one-time construction phase jobs in Florida [13]. They could bring economic benefits to Florida including up to $3.8 billion in the construction phase, and $26.5 million annually. From a GHG mitigation perspective, the projects PPAs could bring would be the equivalent of taking up to 147,590 cars off the road. The City will use its platform to advocate for PPAs to be allowed in Florida.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Building / Planning & Sustainability	Free (expected cost savings)	Year 3

Goal E.3: Obtain 100% of electricity from clean, renewable sources city wide by 2050

Sustainability Action E.3.6 Consider a partnership with FPL or other entity to lease parking lot land for parking lot solar arrays.

Previous Progress:
Satellite Beach's Pelican Park hosts a 25-kW solar car canopy array. It was designed, built, and maintained by Florida Power and Light (FPL), was implemented as a part of FPL's SolarNow program, a program that is meant to help educate and showcase solar energy to the public through small-scale installations such as this system.

Photo: Solar array Pelican Park, Credit: Thea Baker

Description:
Due to the lack of available roof space in comparison to the amount of space required for solar panels to power all municipal operations, the City will be seeking options for hosting solar arrays in other locations, like parking lots.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Building / Planning & Sustainability	Free (expected cost savings)	Year 3

CATEGORY 2:

Water Efficiency

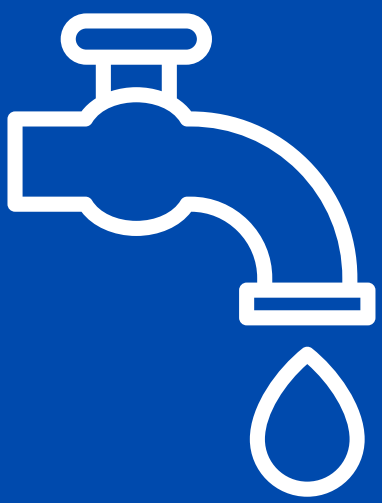


Photo of sprinklers at DeSoto Sports Park, Credit: Dylan Hansen

Category 2: Water Efficiency

Reducing water consumption directly reduces energy consumption, as it requires energy to pump and treat water for buildings and landscapes. It is acknowledged that part of a protected water supply involves protecting and conserving the water sources themselves. However, conservation efforts in relation to groundwater and surface water protection will be discussed in Category 5: Natural Resource Protection.

Where does Satellite Beach's potable water come from?

The City of Satellite Beach receives potable water supply through the City of Melbourne's utilities, in conjunction with 7 other nearby areas. The average water demand for City of Melbourne Utilities (including Satellite Beach and all surrounding areas) is approximately 17 million gallons per day (GPD) and for just Satellite Beach is 791,359 GPD (5%). The two sources of water include Lake Washington (two-thirds), part of the St. John's River, and the Floridan Aquifer (one-third).

The water from the lake, also known as surface water, is treated at the John A. Buckley Surface Water Treatment Plant (12.5 MGD). The water from the Floridan Aquifer, also known as groundwater, is provided via four production wells and treated at the Joe Mullins Reverse Osmosis Water Treatment Plant (5 MGD). Plans are in place to install six additional wells between 2022 and 2024.

Photo: Aerial view of the water production plants at Lake Washington, retrieved from: City of Melbourne Website

Category 2: Water Efficiency

What does the future look like?

Satellite Beach is part of the Central Springs/ East Coast division of the St. Johns River Water Management District (SJRWMD) as can be seen in the map to the right. According to the Central Springs/ East Coast Regional Water Supply Plan [14], published on February 7, 2022, Brevard County is expected to see the following ***increases*** by 2040:

- Population: 34%
- Total water demand: 21%, 74.7 mgd*
  - 1-in-10 year drought event**: 81 mgd, 44%
- Public Supply Water Demand: 29%, 43 mgd
  - 1-in-10 year drought event: 37%, additional 11.5 mgd
- Landscape/Recreation/Aesthetic Water Demand: 32%, 13.2 mgd
  - 1-in-10 year drought event: 66%, additional 13.8 mgd

*Million Gallons per Day

**represents an event that would result in an increase in water demand of a magnitude that would have a 10 percent probability of occurring during any given year

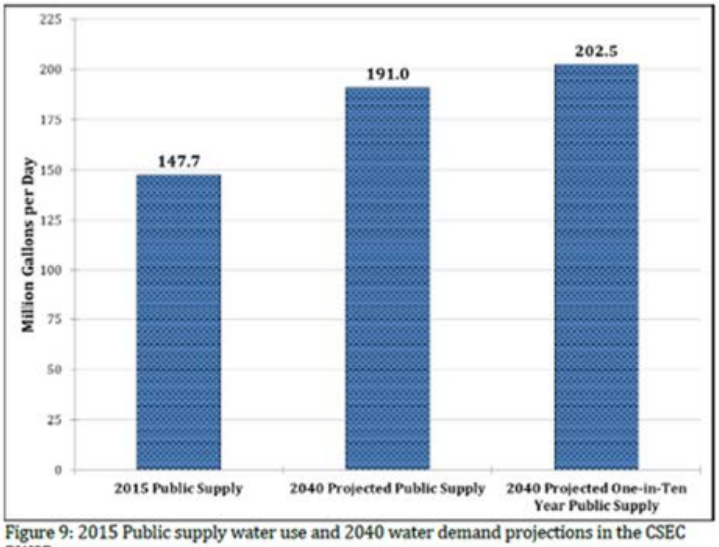


Figure 9: 2015 Public supply water use and 2040 water demand projections in the CSEC RWSP area

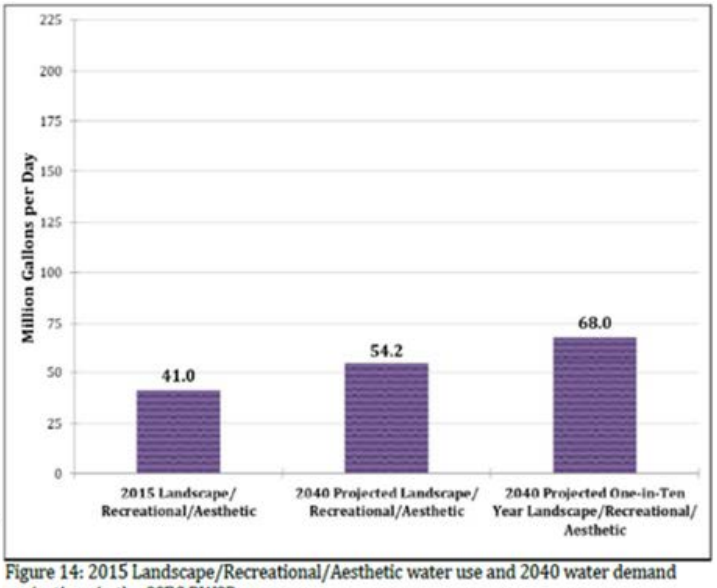


Figure 14: 2015 Landscape/Recreational/Aesthetic water use and 2040 water demand projections in the CSEC RWSP area

This means that by 2040, if we continue business as usual, Brevard County needs to find a way to provide between 21% and 44% more water to meet expected demands. In order to reduce that demand on Brevard County's water sources, Satellite Beach recognizes it's role in reducing per capita water demand. This is why Satellite Beach has established this Water Efficiency Category in the Sustainability Action Plan and Goals 2.1 and 2.2 to reduce publicly supplied potable water consumption by 50% by 2040.

Our 2022 Goals

W.1

Reduce water consumption on city-owned property, including a reduction in publicly supplied potable water by 50% by 2040.

This goal covers all water usage for Government-owned infrastructure including buildings, parks, recreational facilities, and other public-service facilities. Sources of water supply may be publicly supplied potable water, well water, and harvested rainwater.

W.2

Reduce the Satellite Beach Community's use of publicly supplied potable water by 50% by 2040

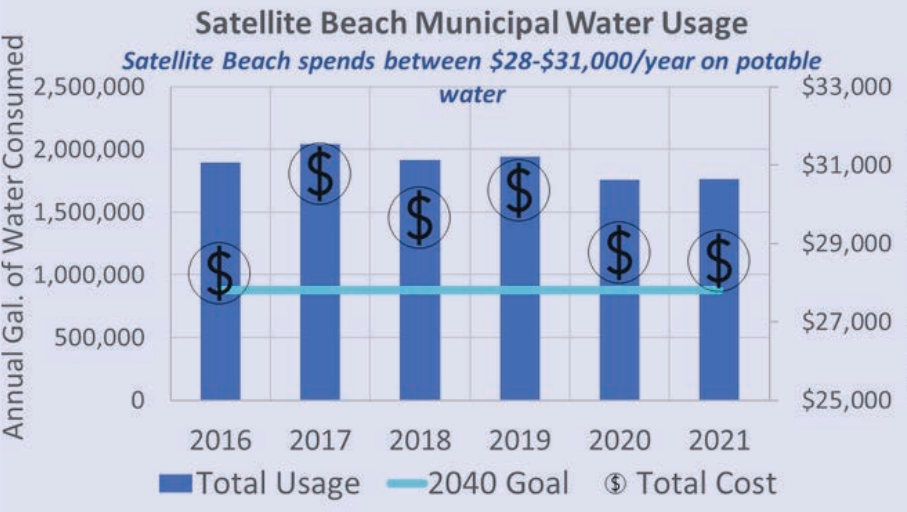
This goal covers publicly supplied potable water for Satellite Beach residents and business owners, which is a trackable metric, as well as resident and business owner well-water usage. Well-water usage in the community is not trackable at the community scale, however it is still imperative to create initiatives around all types of water-use reduction.

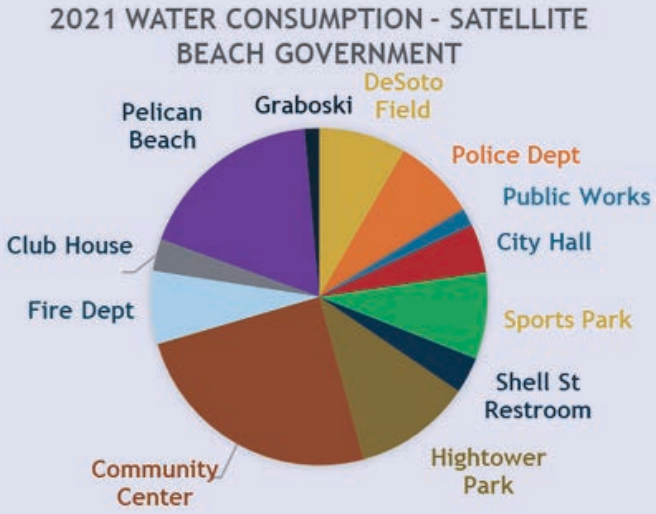
Photo from doorhanger distribution volunteer day, July 2022

Goal W.1

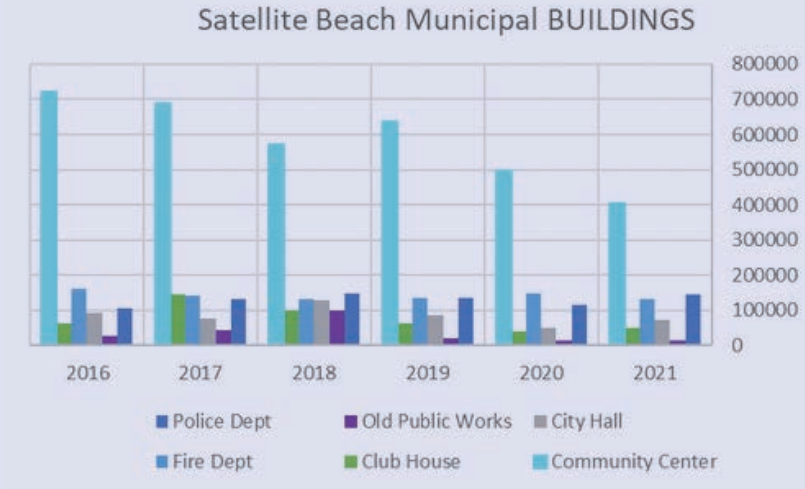
Reduce water consumption on city-owned property, including a reduction in publicly supplied potable water by 50% by 2040.

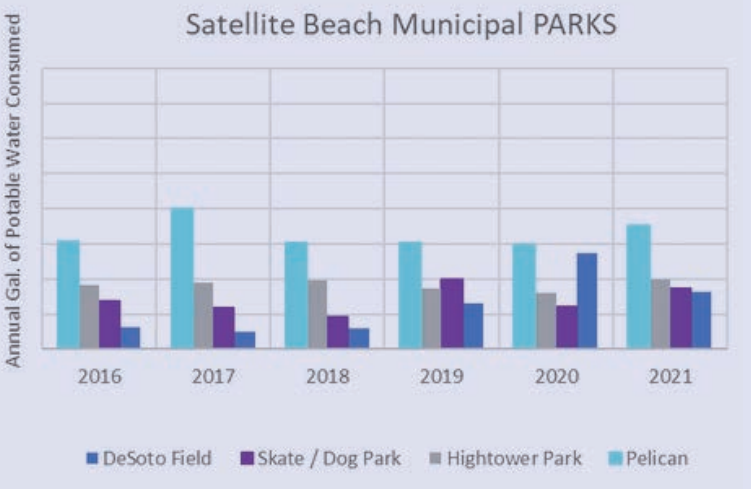
Indicators





The 2040 goal is based on a reduction from 2017 rates. 2017 potable water consumption for Satellite Beach municipal property was 1,754,000 gallons. The 2040 goal is to reduce that consumption to 877,000 gallons or less.





The DRS Community Center uses more than 3 times the potable water than any other municipal building.

Pelican Beach Park uses almost double the amount of potable water that every other municipal park uses.

Goal W.1: Reduce water consumption in city-owned infrastructure, including a reduction in publicly supplied potable water by 50% by 2040

Sustainability Action W.1.1 Perform an audit of all city facilities to determine which indoor water fixtures are high efficiency. low-flow and create cost/ benefit analysis of replacing fixtures versus modifying.

Description:
Perform an audit of all city facilities to determine which indoor water fixtures are low-flow and create cost/ benefit analysis of replacing fixtures versus modifying. This can be completed using existing site plans to develop a list of all indoor water fixtures. Unless already dictated on the site plans, each fixture will be visited to determine flow-rates, which are typically written on toilets and sometimes on faucets.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works / Planning & Sustainability	Staff Hours	Year 2

Sustainability Action W.1.2 Transition all indoor city plumbing fixtures to high-efficiency fixtures or fittings where feasible.

Description:
Based on audit results (from Action W.1.1), all fixtures that are not low flow will be replaced or updated to become high-efficiency. High efficiency flow and flush fixtures are as follows: lavatory: 0.5 gallons per minute (gpm), kitchen sink: 1.8 gpm, toilet: 1.0 - 1.28 gallons per flush (gpf), urinal: 0.5 gpf. While replacement of fixtures is sometimes necessary, in most cases reduced-flow accessories (e.g. flow restrictors, flow regulators, aerators and laminar flow devices) can be added to existing fixtures. Hallandale Beach estimated a project like this would reduce annual water consumption by ~20% for some buildings. A 20% reduction in water use could save Satellite Beach $5,700/year.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works	~$20,000 - $30,000	Year 3 (Begin after audit)

Goal W.1: Reduce water consumption in city-owned infrastructure, including a reduction in publicly supplied potable water by 50% by 2040

Sustainability Action W.1.3 Perform a cost / benefit or life cycle analysis of using artificial turf on sports fields, including the water-reduction impacts.

Description:
Using artificial turf on sports fields can have many pros and cons. Artificial turf may have lower maintenance costs, less water use, be pesticide free, and cause fewer injuries. However, there are negative effects of artificial turf including increased heat-hazards, toxic run-off, potential harmful chemicals, and a reduction in carbon sequestration. In order to determine whether artificial turf is a valuable option for Satellite Beach sports fields, a cost-benefit analysis of maintenance and water savings will be completed. Staff will also evaluate all potential health and environmental effects.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 3

Goal W.1: Reduce water consumption in city-owned infrastructure, including a reduction in publicly supplied potable water by 50% by 2040

Sustainability Action W.1.4 Convert all municipal building irrigation to use either gray water or harvested rainwater by 2040.

Previous Progress:
Currently, the Satellite Beach Library sports park fields are irrigated using stormwater pond re-use. As part of the 2017 Sustainability Action Plan, a target of installing xeriscaping at every municipal building was created. Xeriscaping is the practice of designing landscapes to reduce or eliminate the need for irrigation. Xeriscaping was installed at Satellite Beach City Hall, Police Station, Fire Station, and Community Center. Each of these areas should require little to no irrigation once fully established.

Photo: Xeriscaping at new Public Works building

Photo: Xeriscaping at Police Department

Description:
As technology continues to evolve, the ability to harvest and use gray water and rain-water will continue to become more cost-effective. Due to the installation of xeriscaping at many City properties, the need for irrigation has been reduced. For what is left of building landscape irrigation, rainwater and / or gray water will be harvested and used. Harvesting methodology may include large storage tanks between 1,000 and 5,000 gallons in size, depending on site space and water requirements.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works	Unknown	Within 20 Years

Goal W.1: Reduce water consumption in city-owned infrastructure, including a reduction in publicly supplied potable water by 50% by 2040

Sustainability Action W.1.5 Investigate the feasibility of using gray water or rainwater for toilets in all future new-builds or major renovations and in facilities with public toilets.

Previous Progress:
The City of Cocoa Beach, who controls all of the wastewater from Satellite Beach, supplies reclaimed water to Cocoa Beach Residents. Reclaimed water is domestic wastewater that receives advanced treatment, filtration and high-level disinfection processes so the water can be safely recycled and distributed back into to the community. At this time, municipally-supplied reclaimed water is not available for Satellite Beach residents.

Description:
In office buildings, toilets can be responsible for around 63% of all water use. Toilets are one application where gray-water (waste water from sinks) can be used in lieu of fresh water. Gray-water systems can be put in place where the waste water from sinks is filtered and pumped back into the toilet water supply system. This type of system is best to be installed during a new-build. As new municipal buildings are being built, city staff will evaluate the possibility of installing a gray-water system for toilet flushing.

Case Study [15]:
In the Solaire in NYC, the showers, sinks, dishwashers, washing machines, and all 750 of the building's toilets flush up to 25,000 gallons of sewage each day down into a 1,500 square foot concrete room carved out of the parking garage housing a membrane bioreactor that turns sewage into clean water for non-potable uses throughout the building. The Solaire has reduced water consumption and discharge by 48% and 56% respectively while adding about 0.5% to the cost of the building. At current sewer and water rates, the Solaire's water reuse system will take up to twelve years to pay itself off.

Case Study:
The Brock Environmental Center in Virginia Beach utilizes a rainwater harvesting system to meet the entire water supply needs (both potable and non-potable) of the facility. The rainwater storage, treatment, and distribution system utilizes water filtration and disinfection systems capable of meeting all the performance requirements of the Virginia Waterworks Regulations and the EPA federal Safe Drinking Water Act and cost $81,000. The building also treats its blackwater and greywater onsite and is not connected to the municipal system, which saved a $380,000 connection fee.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works/ Planning & Sustainability	Unknown (Future Cost Savings)	Year 2

Goal W.1: Reduce water consumption in city-owned infrastructure, including a reduction in publicly supplied potable water by 50% by 2040

Sustainability Action W.1.6 Increase irrigation efficiency by switching to drip irrigation when possible, ensuring all sprinkler systems have a rain sensor and/ or gauge system to prevent watering during rain events, and transition to low-flow irrigation equipment.

Description:
Florida law requires any automatic lawn sprinkler system installed after May 1, 1991, to have a rain sensor or switch that will override the irrigation system when adequate rainfall occurs (FAC 40C-2.042(2)(a)(5)). A rain sensor is used to prevent an irrigation system from operating during or immediately after a rain event. Rain causes the sensor to keep the irrigation system turned off during or after sufficient rainfall is measured. All sprinkler systems, regardless of type, will be retrofitted with rainfall sensors. All sprinkler systems in place for landscaping will be replaced with drip irrigation where possible. This will not include irrigation of fields.


Photo Credit: Dylan Hansen

Status	Responsible Department	Cost	Timeframe
In Progress	Public Works	<$5,000 then cost savings	Year 1

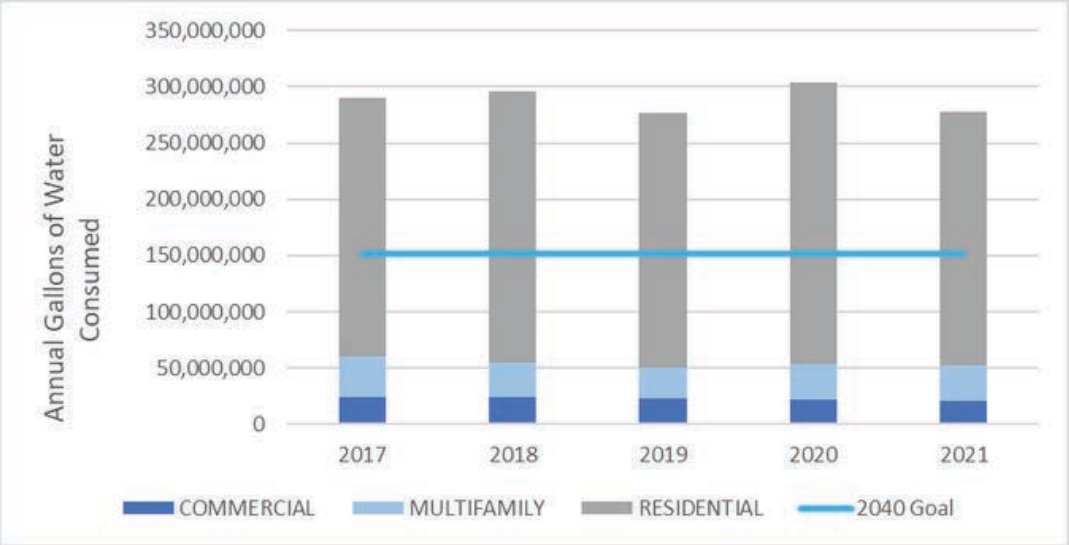
Goal W.2

Reduce the Satellite Beach Community's use of publicly supplied potable water by 50% by 2040

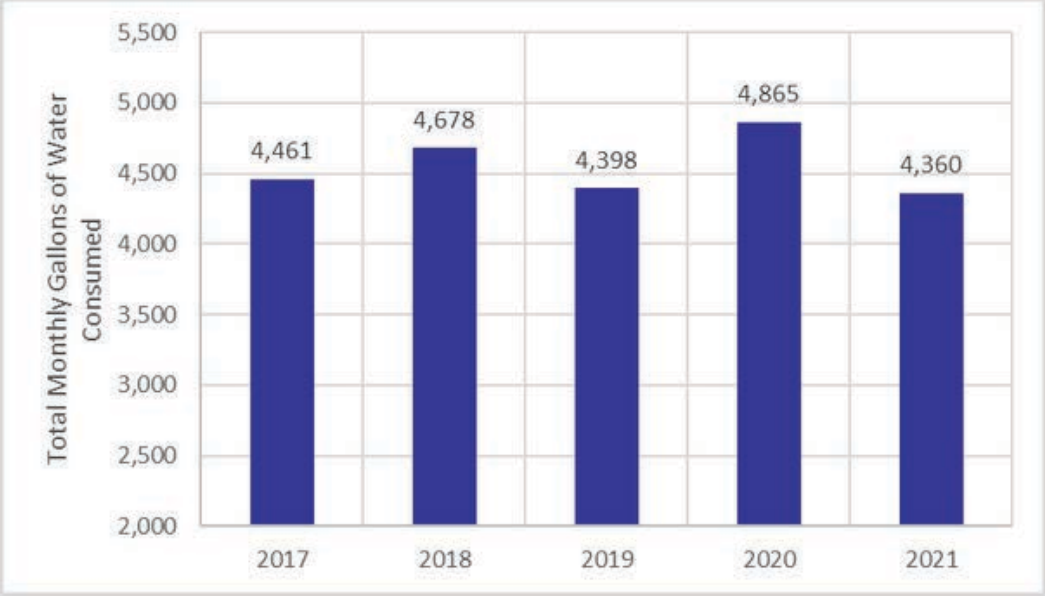
Indicators

The 2040 goal is based on a reduction from 2017 rates. 2017 potable water consumption for Satellite Beach community was 292,650,900 gallons. The 2040 goal is to reduce that consumption to 146,325,450 gallons or less. In terms of residential monthly usage, this would entail dropping the monthly consumption from 4,461 gallons/month (2017) to 2,230 gallons/month by 2040.

Satellite Beach Community Water Usage



Satellite Beach Residential Water Usage (Excluding Multifamily)

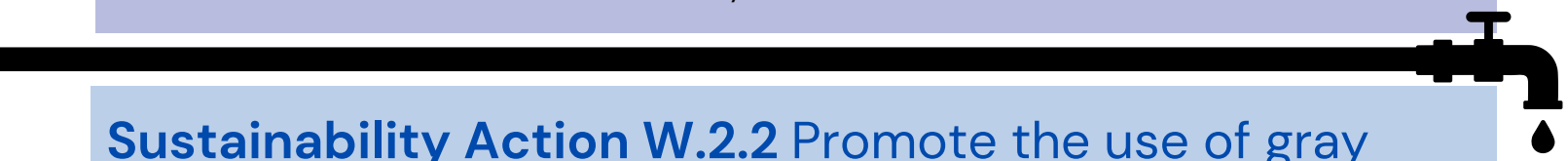


Goal W.2: Reduce the Satellite Beach Community's use of publicly supplied potable water by 50% by 2040

Sustainability Action W.2.1 Investigate funding sources to promote homeowner installment of water-reduction fixtures.

Description:
Replacing old, inefficient faucets and aerators with WaterSense labeled models can save the average family 700 gallons of water per year [17]. Staff will investigate funding sources to promote homeowner installment of water-reduction fixtures such as low-flow fixtures, aerators, or toilet tank banks. If resources allow, the City shall consider providing such fixtures directly to public, or providing rebates for public to install water-efficient fixtures.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 2

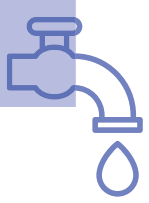


Sustainability Action W.2.2 Promote the use of gray water in irrigation and toilet flushing.

Previous Progress:
Prior to March 1, 2009 the Florida Building Code adopted, in entirety, the International Plumbing Code recommended uses and gray water was approved for use for flushing of water closets (conventional flush toilets) and urinals and for subsurface landscape irrigation (Florida Building Code 2007). After March 1, 2009, the Florida Building Code was updated and specifies that gray water may only be used for flushing of toilets and urinals (Florida Building Code 2009). Upon initial review of 2020 Florida Building Code, it is not clear how grey water is allowed to be used [18].

Description:
City staff will first confirm that grey water can be used for irrigation and not just toilet flushing. Further, in order to promote the use of gray water for residential use, staff will identify plumbing contractors in the area who can specialize in gray-water reuse systems and create partnerships to aid in more widespread re-use of gray-water in a cost-effective manner.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 2



Goal W.2: Reduce the Satellite Beach Community's use of publicly supplied potable water by 50% by 2040

Sustainability Action W.2.3 Host a minimum of one water conservation workshop a year.

Description:
At least once a year, either on its own or in conjunction with other events (such as the annual Earth Day event), a water conservation workshop will be held and recorded to go over water conservation tips for homeowners. Educational material will be created to hand out at the workshops. All workshops to be catalogued on the city website for organizational purposes.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

Sustainability Action W.2.4 Create a resolution in city council to establish April as Water Conservation Month.

Photo of a leaking hose at garden, credit: Thea Baker

Description:
Staff will create a resolution through city council to establish April as Water Conservation Month. During this month, staff will host city-wide challenges to promote water efficiency inside and outside the home. One idea may involve setting up a Social Media campaign every April to reduce water consumption from the previous year by submitting last year's bill versus this year's bill. Households with the greatest difference will win prizes.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	City Clerk / Planning & Sustainability	Free	Year 1

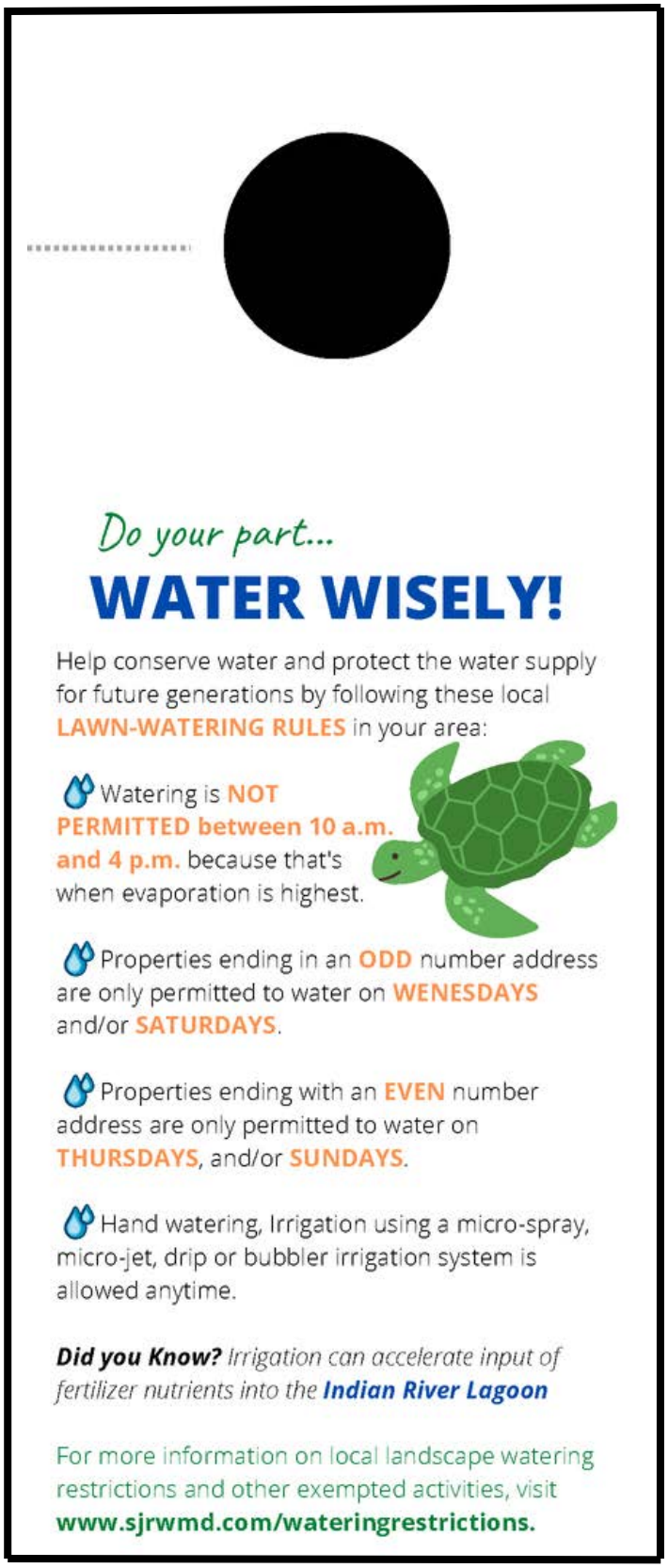
Goal W.2: Reduce the Satellite Beach Community's use of publicly supplied potable water by 50% by 2040

Sustainability Action W.2.5
Enforce landscape watering restriction schedule and educate residents on the importance of the schedule.

Previous Progress:
In 2022, roughly 3,000 doorhangers showing the watering schedule and fertilizer ban were distributed to Satellite Beach residents. This was done through a volunteer distribution event where 37 volunteers contributed over 93 volunteer hours and walked over 50 miles of the City.

Description:
Staff will continue the doorhanger distribution event every year prior to the rainy season. Staff may develop other community-wide material (flyers, magnets, etc) notifying residents of the landscape watering ordinance and why it is important. Residents will be encouraged to promote responsible watering with neighbors and discuss the importance of not over-watering or watering inefficiently.

Photo from doorhanger distribution volunteer day, July 2022



Status	Responsible Department	Cost	Timeframe
In Progress	Building / Planning & Sustainability	Free	Ongoing

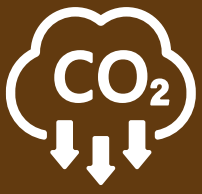
CATEGORY 3:

Materials & Solid Waste

Category 3: Materials & Solid Waste

Economic Opportunity

Reduced Greenhouse Gas Emissions



Resource Conservation

Improved Public Health

The amount of waste being produced per person worldwide, including in Satellite Beach, has been growing considerably for many decades. For instance, in the European Union, the average yearly amount of waste produced per person increased by 132 pounds/person between 1995 and 2017. There are three main concerns with the rapidly growing waste stream: (1) increased greenhouse gas emissions, (2) the impacts of landfills on surrounding communities, and (3) the overconsumption of nonrenewable resources. Environmental pollution produced due to landfilling waste include emissions from transport, waste blown by wind, dust generated from the landfill surface, landfill gas generated, and leachate produced [19].

Currently, one third of food grown is thrown away. When this food waste ends up in landfills, methane is produced due to its anaerobic (without oxygen) decomposition. If given the opportunity to break down aerobically, food waste would produce carbon dioxide rather than methane. Methane is a GHG 87 times more powerful than carbon dioxide at retaining heat in the atmosphere and is responsible for 30 to 40% of the temperature increase experienced today. However, methane remains in the atmosphere for a much shorter duration than carbon dioxide, thus actions to reduce methane emissions can have a powerful impact on this generation. When it comes to food waste, the overarching goal should be to create less food waste in general (i.e. eat 100% of the food that you buy), but if it cannot all be salvaged, to choose aerobic forms of disposal (compost) instead of anaerobic (landfill). One report states that reducing methane is the single, most effective way to reduce the rate of global warming, and to achieve the 1.5° Paris Agreement target, in parallel with drastic cuts in CO2 emissions as well [20].

Although there are no landfills or material sorting facilities within the boundary of Satellite Beach, the city recognizes the need to take responsibility for the waste it produces. The city does not want to hand off its waste burden to another community without doing its part to reduce its impact. With goals to reduce total landfill contribution, reduce the recycling contamination rate, and to increase diversion rates to 50%, Satellite Beach aims to work towards a more circular economy.

Our 2022 Goals

M.1

Focus on source reduction to reduce total landfill contribution to less than 2 lb/person/day by 2030 and less than 1 lb/person/day by 2050.

This goal reaches out to all residents and business owners of Satellite Beach and was created to encourage the reduction in the over-consumption of consumer goods. These goods may be small (cell phones) or large (furniture), but all require valuable resources to create.

M.2

Achieve and maintain a recycling contamination rate of 20% or less by 2025

The purpose of this goal is to reduce the curbside recycling bin contamination rate. Curbside contamination involves placing items in the residential curbside recycle bins that don't belong (i.e. plastic bags, light bulbs, food). More contamination means less items in total are being recycled.

Photo of Emily McCormick, Sustainability Intern performing a recycling contamination audit

M.3

Increase recycling diversion rates to at least 50% by 2030

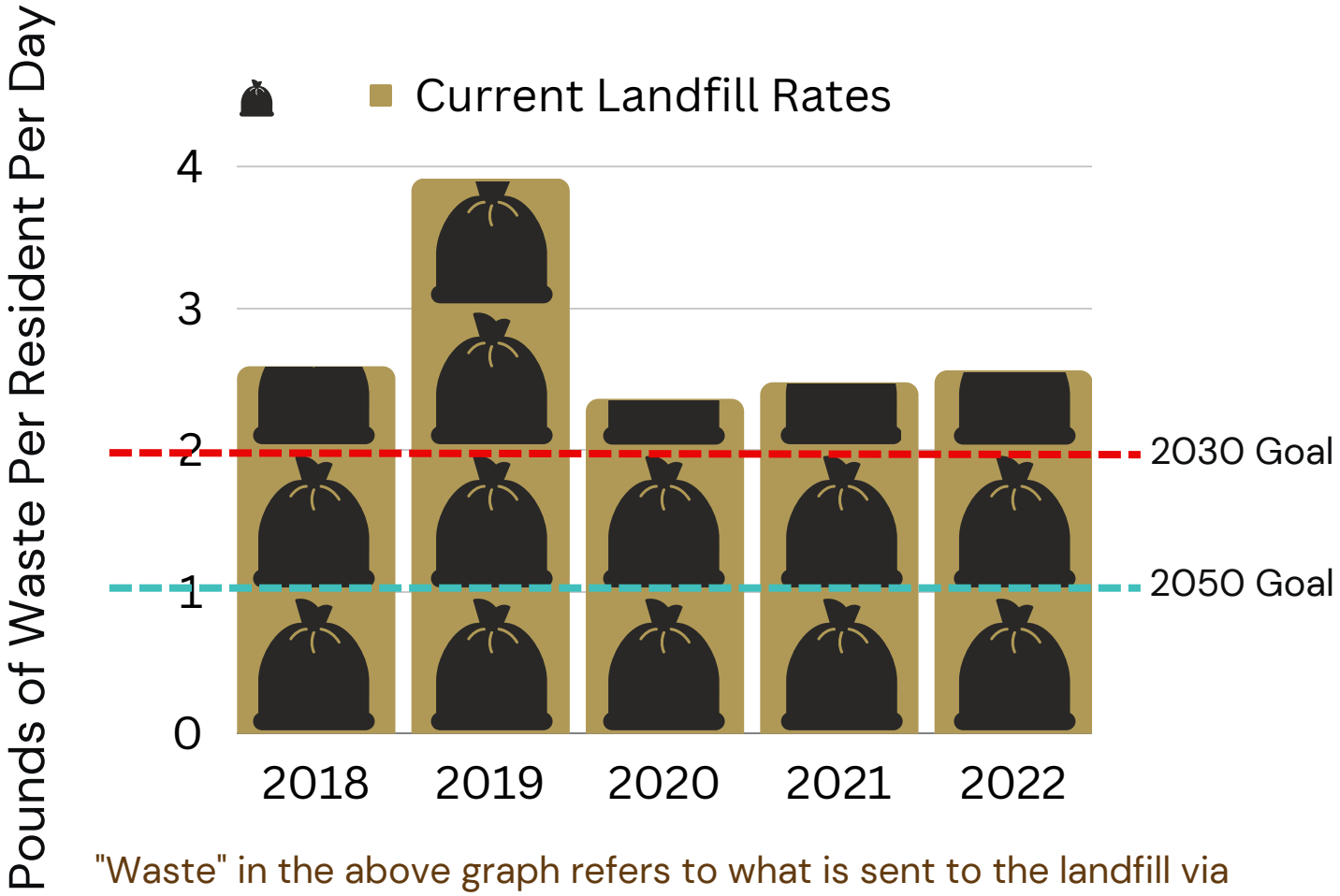
This goal covers all residents and business owners within Satellite Beach and was created to find pathways to incentivize businesses and individuals to find ways to recycle waste instead of sending it to the landfill. A 50% diversion rate would mean 50% of what is being thrown away, is being recycled.

Goal M.1

Focus on source reduction to reduce total landfill contribution to less than 2 lb/person/day by 2030 and less than 1 lb/person/day by 2050.

Indicators

Satellite Beach Solid Waste Trend



"Waste" in the above graph refers to what is sent to the landfill via curbside pickup through Waste Management. It does not include waste from dumpsters for residential construction or commercial waste, however both forms of waste are important to reduce. Those numbers are unavailable at this time. Another note in the above graph is that the waste referred to in Goal M.1 is only referring to landfill waste, not yard waste or recycled waste.

Goal M.1 Focus on source reduction to reduce total landfill contribution to less than 2 lb / person / day by 2030 and less than 1 lb / person / day by 2050.

Sustainability Action M.1.1 Once state-wide legislation allows, implement a city-wide plastic bag fee and require grocery stores to report results

Progress:

More than 148 cities in the U.S. have single-use plastic bag legislation. In Florida: Bal Harbour, Alachua County, North Bay Village, Surfside, Palm Beach, St. Augustine Beach, Gainesville and Coral Gables all implemented a plastic bag bans at some point. All but Coral Gables repealed bans after Coral Gables was sued by Florida Retail Federation and all other cities threatened lawsuits, due to Florida's preemptive laws [21]. As of 7/1/21, FDEP must update a report on retail bags by December 31, 2021. Until then, no local government, local governmental agency, or state governmental government agency may not enact any rule, regulation, or ordinance regarding use, disposition, sale, prohibition, restriction, or tax of such auxiliary containers, wrappings, or disposable plastic bags [22]. The report was completed [23], showing that *97% of local governments believe regulation is necessary for containers, wrappings, and disposable plastic bags.*

Description:

Once state-wide legislation allows, a city-wide plastic bag fee shall be imposed on all large grocery stores and retailers. This fee shall be nominal to cover the cost and may be kept within the grocery or retail stores or distributed to a fund to cover conservation projects. The purpose of the fee will be to have customers think twice about using a plastic bag and to encourage the use of re- usable bags.

Case Study [24]:

In San Jose, CA, the ban/fee hybrid successfully increased reusable bag use from 4% to 62%, storm drain congestion from plastic bags by 89%, and reduced downtime at disposal facilities by 35-50%. In Colorado, Aspen's hybrid model resulted in 45% of consumers opting for no bag, 40% bringing their own bags, and 15% opting to pay the 20 cents per bag. Washington, D.C., which PAGE 4 imposed a 5-cent fee on all bags, witnessed a 60% reduction in single-use bag consumption within one year. Chicago's 7-cent fee on all bags resulted in a 20% increase in reusable bag use, a 12% increase in customers opting for no-bags, and a 42% reduction in total single-use bags being used

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 4

Goal M.1 Focus on source reduction to reduce total landfill contribution to less than 2 lb / person / day by 2030 and less than 1 lb / person / day by 2050.

Sustainability Action M.1.2 Campaign every July to go plastic-free.

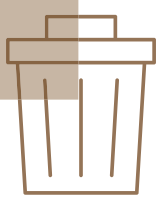
Description:
Every July will be "Plastic-Free July" where residents and visitors are encouraged to reduce all single-use plastic use. Some initiatives may include a campaign to allow residents to post a photo of themselves using a reusable water bottle, grocery bag, or similar with hashtag #PlasticFreeJulySB20YY. Those who post with hashtag will be entered into a drawing for a prize. Another initiative will be to put a "Plastic-Free" tip weekly on Social Media every July.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

Sustainability Action M.1.3 Encourage commercial participation in single-use plastic and Styrofoam reduction.

Description:
Highlight a new business at least yearly in the BeachCaster that is using sustainable practices such as allowing customers to bring their own containers and reducing their use of straws and other single-use items. Encourage Satellite Beach businesses to participate in the Keep Brevard Beautiful (KBB) Litter Quitter program [25].

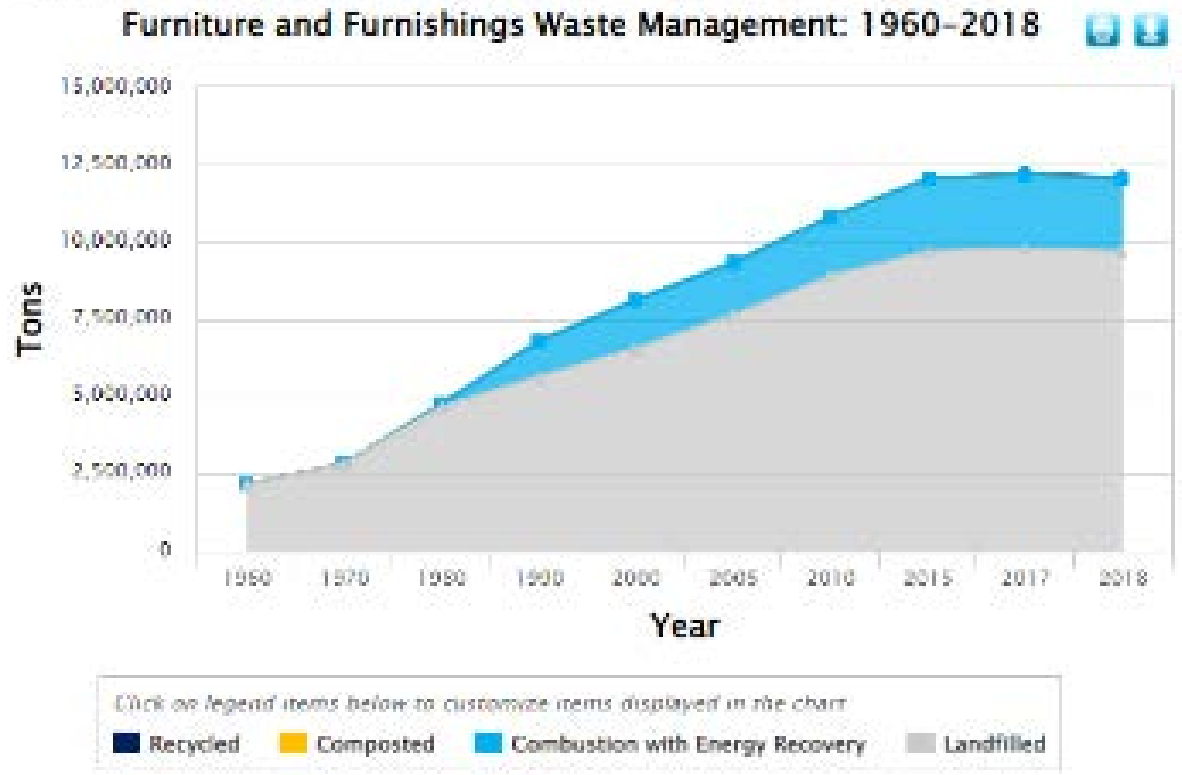
Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	16 hours staff time per year	Annually



Goal M.1 Focus on source reduction to reduce total landfill contribution to less than 2 lb / person / day by 2030 and less than 1 lb / person / day by 2050.

Sustainability Action M.1.4 Continue City-Wide Garage Sales.

Description:
Continue City-Wide Garage Sales to encourage the re-use of household items that are still in good condition and prevent the need for unnecessary resource use. This helps promote economic activity to remain within city boundaries. The Environmental Protection Agency calculated that the tons of furniture and furnishings that have been landfilled over time in the U.S. has increased from less than 2.5 million tons in 1960 to almost 10 million tons in 2018 [26].



Status	Responsible Department	Cost	Timeframe
In Progress	Recreation	Staff Time	Annually

Goal M.2

Achieve and maintain a recycling contamination rate of 20% or less by 2025.

Indicators

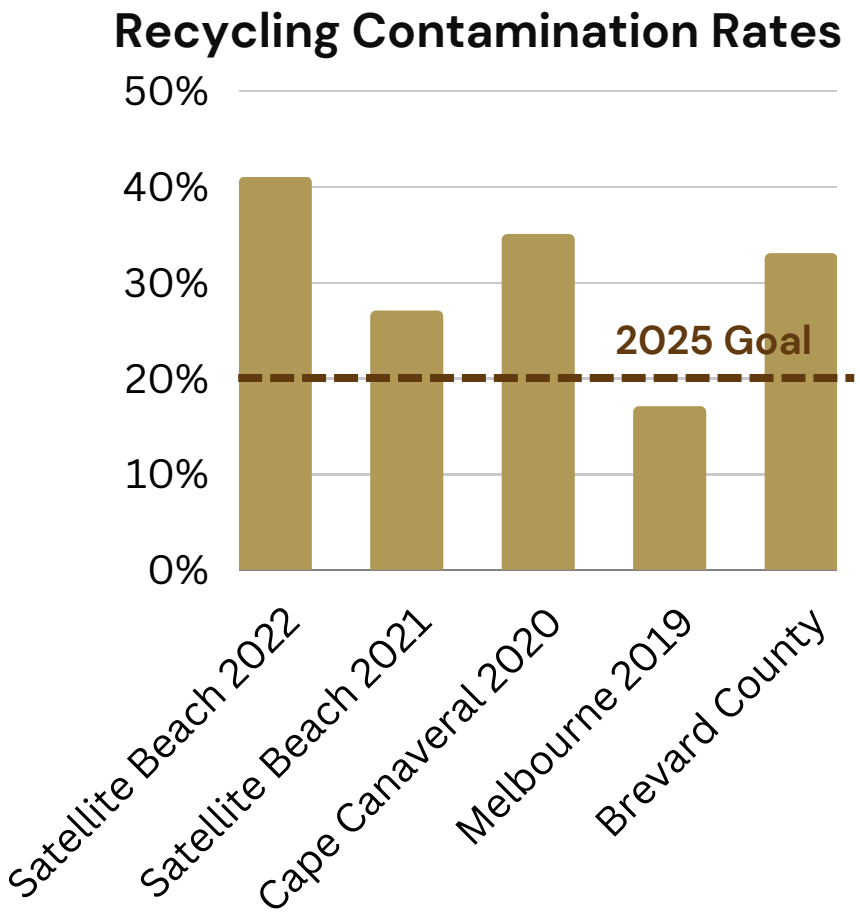


Photo of recycle bin contamination during a weekly audit (household items like lawn chairs cannot be recycled curbside)

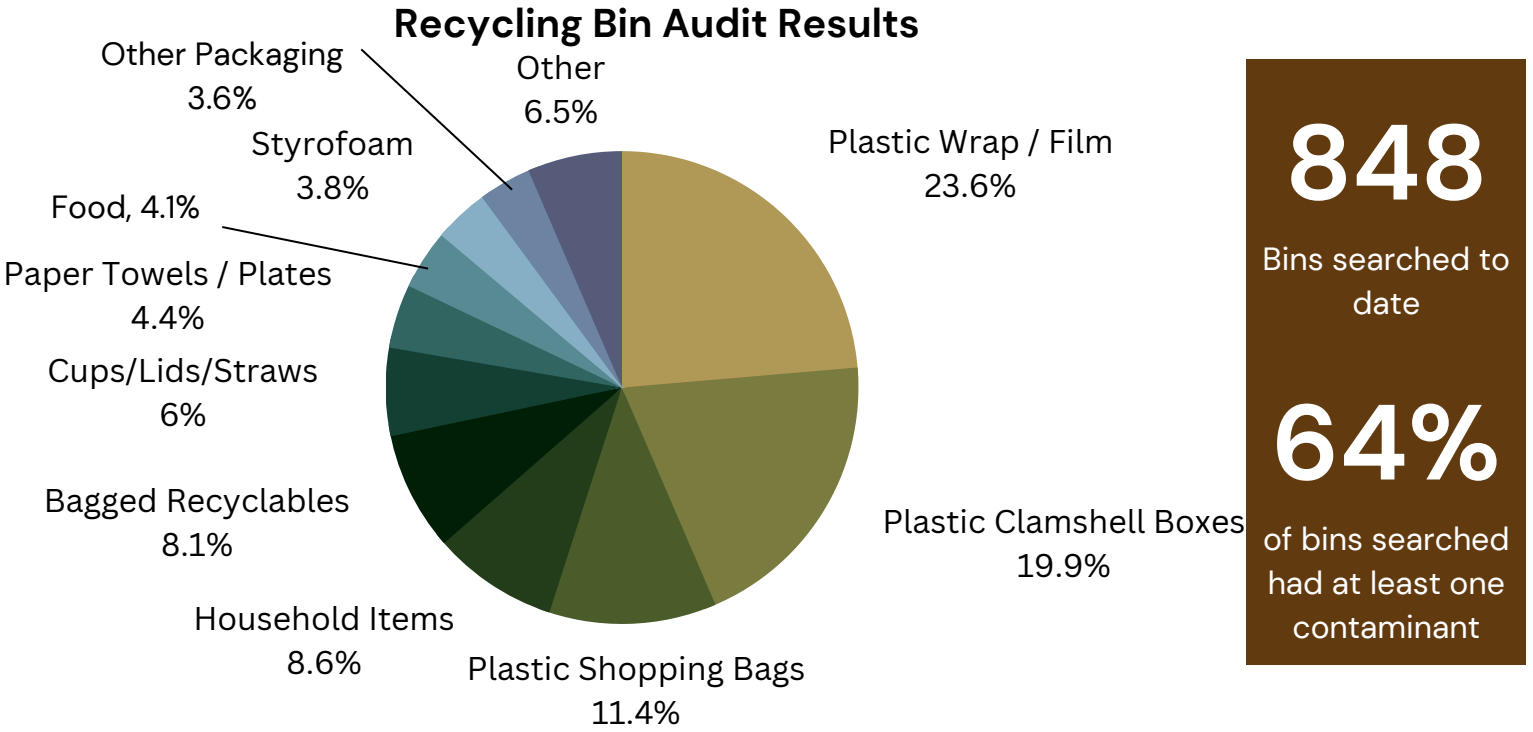
Recycling contamination refers to any incorrectly placed items in the curbside recycle bins. This includes household items furniture (as pictured above), plastic bags, bagged recycleables, food, yard waste, and more. Satellite beach recycling contamination rates were very high (41%) for the first quarter of 2022, higher than Brevard County as a whole (33%). While the City wants to encourage recycling in general, it is important that only the correct items are being placed in the bins. For a full list of allowed and prohibited items, please visit the Brevard County recycling website by using link below:
https://www.brevardfl.gov/SolidWaste/Recycling

Goal M.2 Achieve and maintain a recycling contamination rate of 20% or less by 2025

Sustainability Action M.2.1 Implement a weekly curbside contamination audit program

Previous Progress:
A weekly curbside contamination audit program was established in 2022, but consistency varied. Results from the audit are shown below.

Description:
Once the curbside contamination audit program is established, it will be completed at least twice a month for a year. Each Monday, at least twice/month before recycling trucks make their rounds, a staff member will walk bin to bin and peek inside each recycling bin. Staff will not touch the contents but will evaluate contents that can be seen from the top. Contents will be searched for "contaminants" which include any item that is not supposed to be placed in the curbside bin. Each bin that is checked will receive either a green door-hanger or a red door-hanger. The green door-hanger thanks the residents for recycling right. The red doorhanger will be noted with which contaminants are present (i.e. plastic bags, food, or Styrofoam). The purpose of the program is to aid in educating residents about what can and can't be placed in the curbside bins. City of Melbourne performed a similar audit and was able to reduce their contamination rate from 29% to 17% in 1 year.



848
Bins searched to date

64%
of bins searched had at least one contaminant

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	<$5,000/yr	Year 1

Goal M.2 Achieve and maintain a recycling contamination rate of 20% or less by 2025

Sustainability Action M.2.2 Put a recurring ad in the BeachCaster about how to recycle right, with frequent misconceptions.

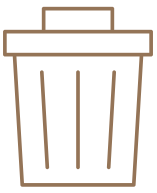
Description:
Satellite Beach staff will aim to put a recurring ad in the BeachCaster at least twice a year about how to recycle right, with frequent misconceptions. In this ad, put Satellite Beach's current and historical contamination rate, side-by-side with other neighboring cities to encourage residents to be part of the most sustainable city. Include education as to why certain items can or can't be recycled.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Year 1

Sustainability Action M.2.3 Distribute a sticker to all recycle bins with information and a QR code linking to the county website.

Description:
Every curbside recycling bin in Satellite Beach has varying levels of identification on them as to what can and can't be recycled. The Brevard County website has an extensive resource as to what can and can't be recycling curbside, organized by household room. A sticker with a QR code to this website will be created and then distributed to all recycle bins in Satellite Beach by the end of 2023.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	<$1,000 + volunteer time	Year 1-2



Goal M.2 Achieve and maintain a recycling contamination rate of 20% or less by 2025

Sustainability Action M.2.4 Increase public education about best waste management practices.

Description:
To Increase public education about best waste management practices, the City will host "Recycling Best Practices" talks alongside Waste Management representatives at HOA communities. At least one HOA talk will be performed twice a year and at least one Waste Management workshop will be hosted annually for the entire community to attend.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Year 1

Image retrieved from:
https://www.wm.com/us/en/recycle-right/recycling-resources

Goal M.3

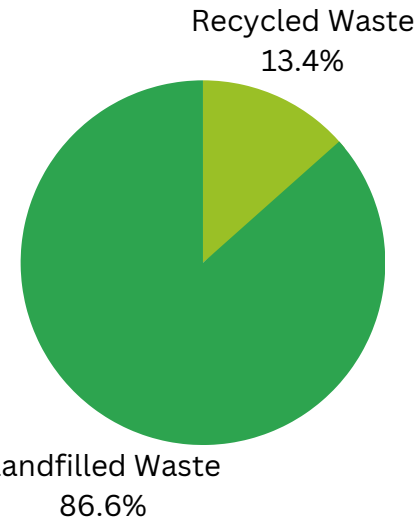
Increase landfill diversion rates to at least 50% by 2030.

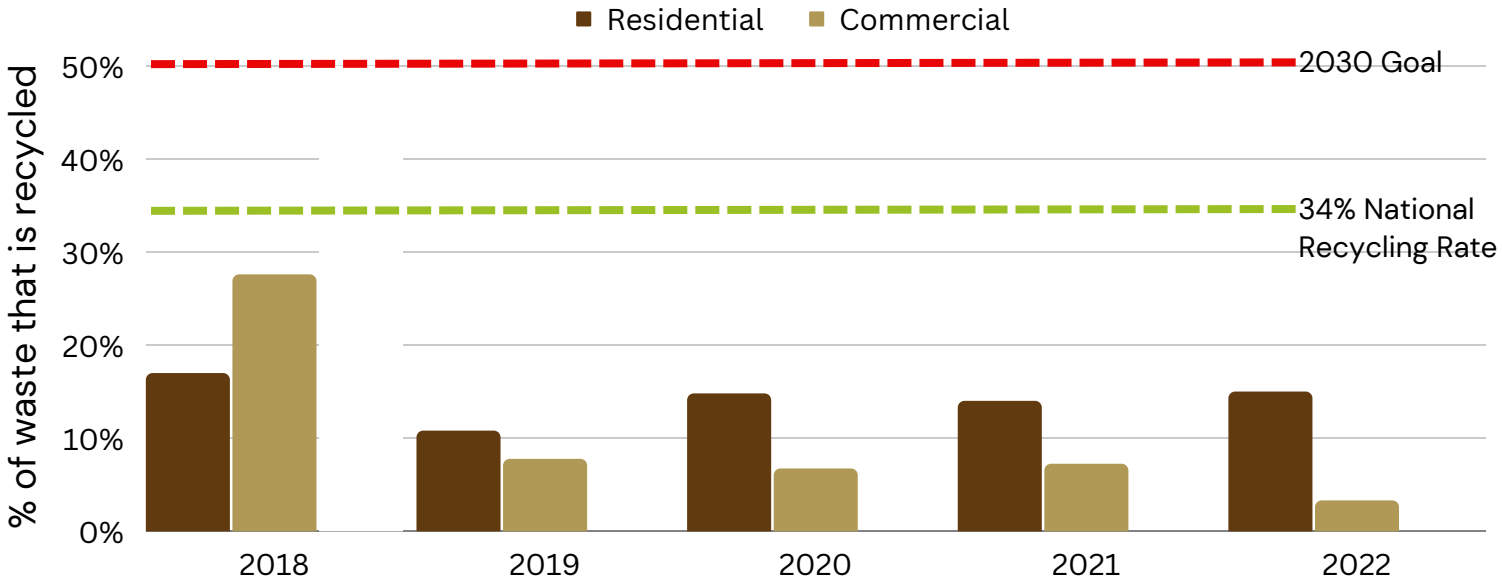
Indicators

Landfill diversion rates can sometimes be called recycling rates. This would mean 50% of household trash that is being disposed of is either getting composted or recycled properly. We chose not to refer to them as recycling rates in the goal so we could account for composting rates in the future. Achieving a 50% diversion rate by 2030 is feasible. Boston published Zero Waste Boston [27] in 2019, including a goal of reaching a recycling rate of 80% by 2035 and 90% by 2050. Further, San Francisco adopted a recycling diversion goal of 75% back in 2002, which was realized by 2004 with a diversion rate of 80% and a reduction in overall disposal by half [28].

Current Satellite Beach Diversion Rates

The data used for the pie chart to the right and graph below are from Waste Management only and only refer to what is collected curbside, for both residential and commercial customers. Total landfill diversion rates for 2021 can be seen in the pie chart on the right. To see these rates separated by residential and business customers, and to see the trend over time, see the graph below. Although commercial recycling rates (diversion rates) spiked at 28% in 2018, rates have not been higher than 8% since then. Residential rates have varied between 11% in 2019 and 17% in 2022. **2022 rates in the graph below are for Quarter 1 - 3 only.*





Goal M.3 Increase landfill diversion rates to at least 50% by 2030.

Sustainability Action M.3.1 Facilitate a community-wide compost program by 2030.

Previous Progress:
Keep Brevard Beautiful has already started their program with a base in West Melbourne, but it is not reaching Satellite Beach yet. Their program is subscription-based at $30/ bucket and they pick up directly at residents' homes. If the program is successful, they will look to expand with satellite locations [29].

Photo retrieved from: https://keepbrevardbeautiful.org/our-programs/organic-composting-program

Description:
If Satellite Beach can contribute land for a satellite location to KBB, the City can piggy-back on KBB's composting program. It will not be possible to quantify how much waste is being diverted to compost until a community wide program exists.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Unknown	Year 3

Goal M.3 Increase landfill diversion rates to at least 50% by 2030.

Sustainability Action M.3.2 Create a program that works with schools to set up composting programs and to ensure there are recycling facilities in lunchrooms and all classrooms.

Description:

In Massachusetts [30], waste audits showed that on average, schools dispose of about 0.5 pounds of food waste per student per week. The Planning & Sustainability Department will work with the Youth Council to create a composting program in Satellite Beach High School and to ensure there are recycling facilities in the lunchrooms. Youth Council shall also create a plan to ensure recycling material is getting sent to the appropriate source. If program is successful, this may be expanded into the middle and elementary school.

Case Study [30]**:** Martha's Vineyard Regional High School was able to divert 25,000 pounds of food waste in 2019, after students completed a waste audit and found that 63% of trash was wasted food. Andover Public Schools diverted 217 tons of food wasted and donated 9 tons of food to local non-profits.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 2

Sustainability Action M.3.3 Convert every public trash can to a dual bin system with recycling options city wide.

Previous Progress:

The city has already installed recycle bins at each beach and converted to the dual bin system for many public areas and parks. Need to determine exact number of trash cans versus trash cans with recycle bins.

Description:

First, staff will determine drawbacks of recycle-bin contamination in public areas and investigate solutions to prevent recycling contamination. Once an audit is completed and solutions are determined, every public trash can will be converted to be a dual bin system to ensure recycling options city wide.

Photo of dual-bin waste system at Desoto Park, credit: Thea Baker

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works	$500-$1,500 per bin	Year 1-2

Goal M.3 Increase landfill diversion rates to at least 50% by 2030.

Sustainability Action M.3.4 Investigate a partnership with local gas stations to sponsor public drive-up recycle bins at gas stations that Public Works services.

Description:
Two pilot gas station will be chosen, one along Highway A1A and one along South Patrick Dr. At each of these gas stations, the City will set up drive-up recycle bins for the public the dispose of their recyclable items when filling up their vehicles with gas or stopping for a treat. In addition to collaboration with the gas stations, this will involve conversations with Waste Management to determine best methods of implementation.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works	Free	Year 3

Sustainability Action M.3.5 Consider a Universal Recycling Ordinance.

Description:
A Universal Recycling Ordinance would involve phasing in the requirement of (1) commercial business and multifamily building owners to provide all commercial tenants, multifamily residents and employees access to recycling; and (2) food-permitted businesses to supply all employees convenient access to diversion methods that keep organic materials out of landfills. Organic material can include unused food, food scraps and food-soiled paper. Start by creating a program incentivizing businesses to recycle. A database could be created (similar to the one for energy), where businesses could upload their waste and diversion rate information from Waste Management and set a goal of a certain diversion rate. If businesses hit that goal, they can receive a discount on BTS and fire inspection fees. Another next step could be setting up zero waste business incentives, similar to Austin, TX, where eligible businesses can receive up to $3,000 for reducing waste beyond the minimum requirements of the Universal Recycling Ordinance [31].
Reference: Orlando, FL Commercial and Multifamily Recycling Policy [32]

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 1

CATEGORY 4:

Resilient Infrastructure

Photo of raised elevation and covered bus stops throughout the City

Category 4: Resilient Infrastructure

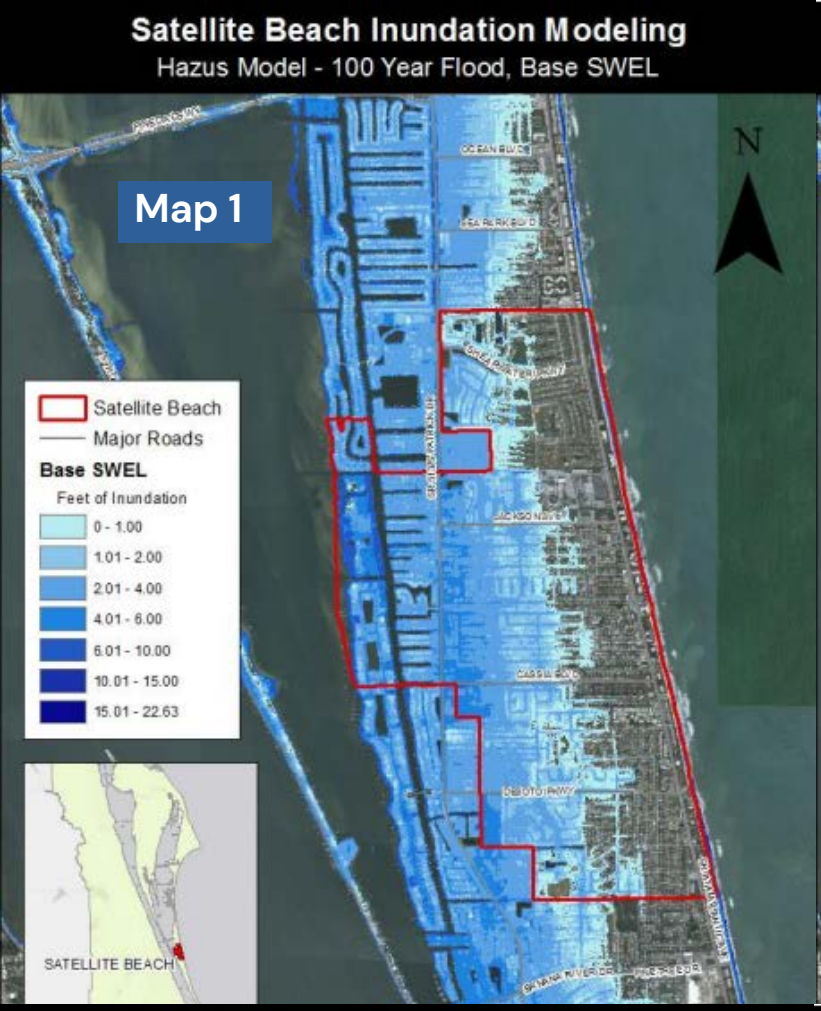
Satellite Beach contains just under 3 square miles of land. The City's highest elevation is slightly over 20 feet (on coastal dunes). More than 85% of its land area is below 10 feet, and about half of its land area is below 6 feet [33]. With goals to adapt the City to the impacts of climate change, including infrastructure improvements, changes in land development, and policy updates, this Category will be used to prepare all Satellite Beach property, including municipal, public, and private property for long-term effects of climate change including sea level rise, hurricanes and storms, flooding events, and power, water, and food shortages. The following 4 hazards are expected to be some of the most pressing for Satellite Beach [34]:

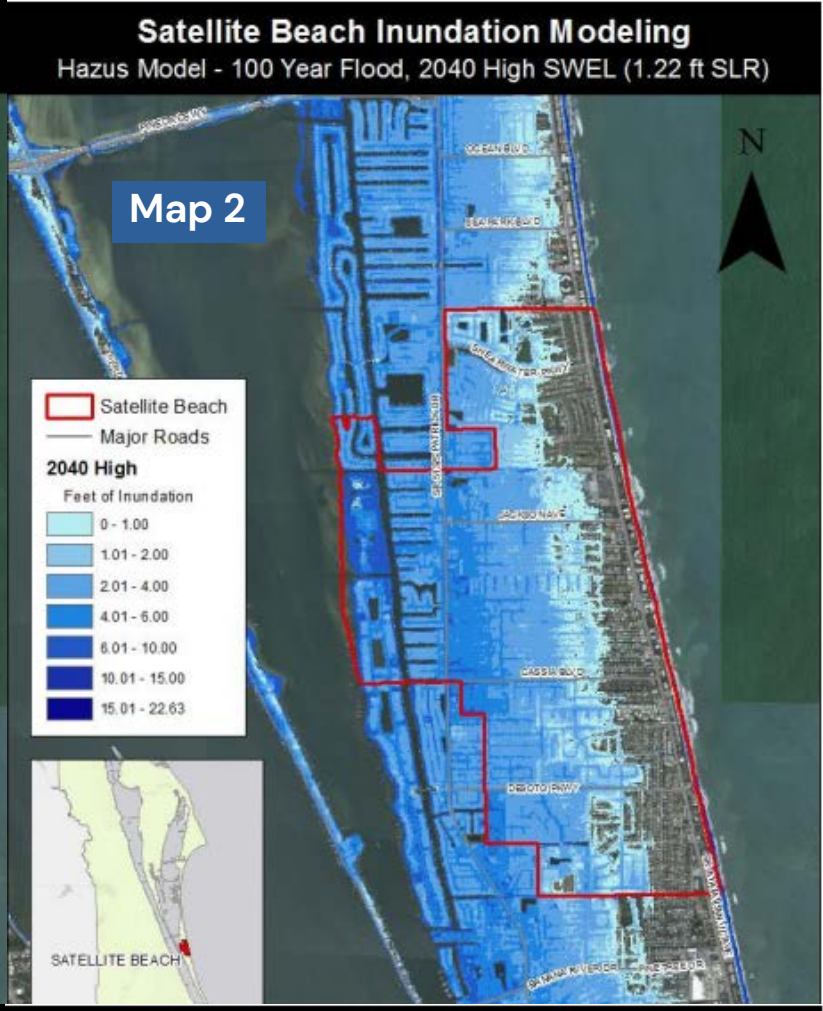
- **Storm Surge** - the increase in water level along a shoreline during wind and wave-induced storm events
- **Flooding** - the inundation of a normally dry area caused by an increased water level in an established watercourse, such as a river, stream, drainage ditch, or ponding of water at or near the point where the rain fell
- **Coastal Erosion** - paired with disproportionately high values of the properties adjacent to the Atlantic Ocean – 20% of total taxable value of all properties within the City- heightens the financial risk of coastal erosion
- **Sea Level Rise (SLR)-** includes the long-term hydrologic, atmospheric and geographic effects of rising seas as caused by climate change

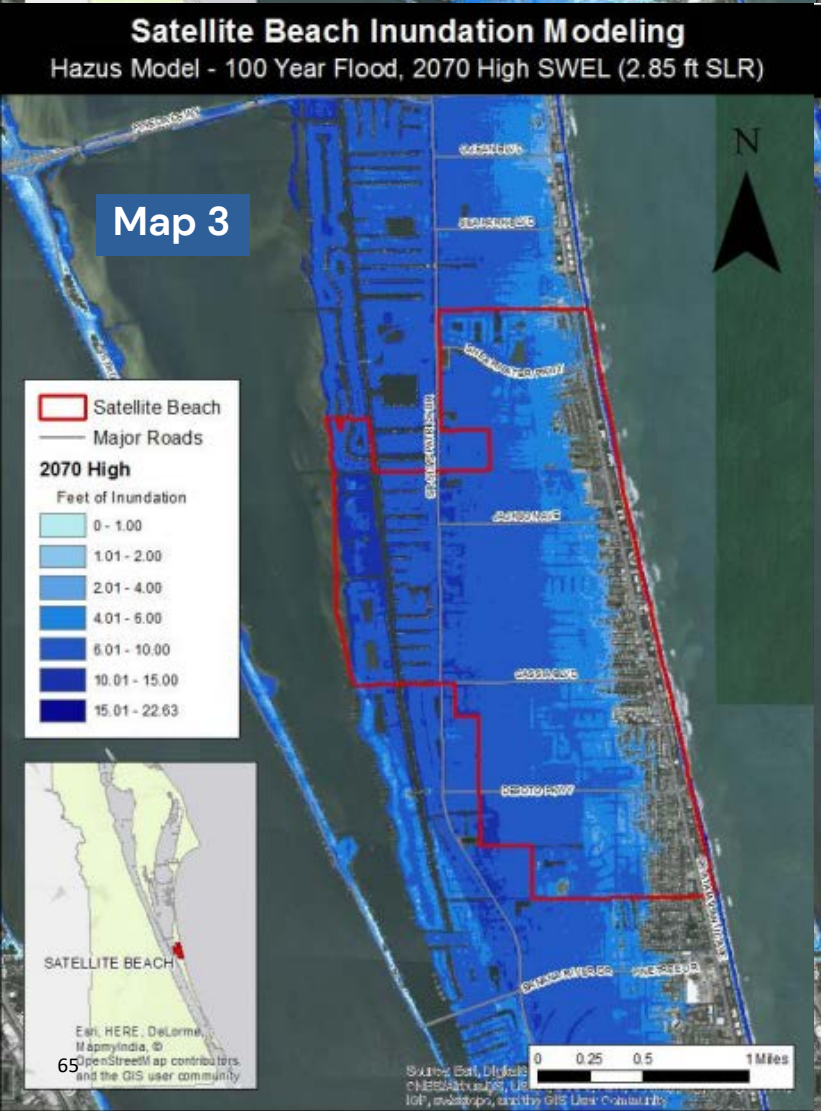
Satellite Beach has incurred impacts related to the hazards listed above during several named tropical storms and hurricanes, including Erin (1995) Frances (2004), Jeanne (2004), Fay (2009), Matthew (2016), and Irma (2017). However, the City has been able to escape catastrophic damage because no hurricane Category 3 or above has made direct landfall at Satellite Beach (or any area in Brevard County) since the beginning of known historical weather records. This being said, Satellite Beach is not immune to the possibility of a direct hit from a major storm and the City recognizes the need to plan for such an occurrence [35].

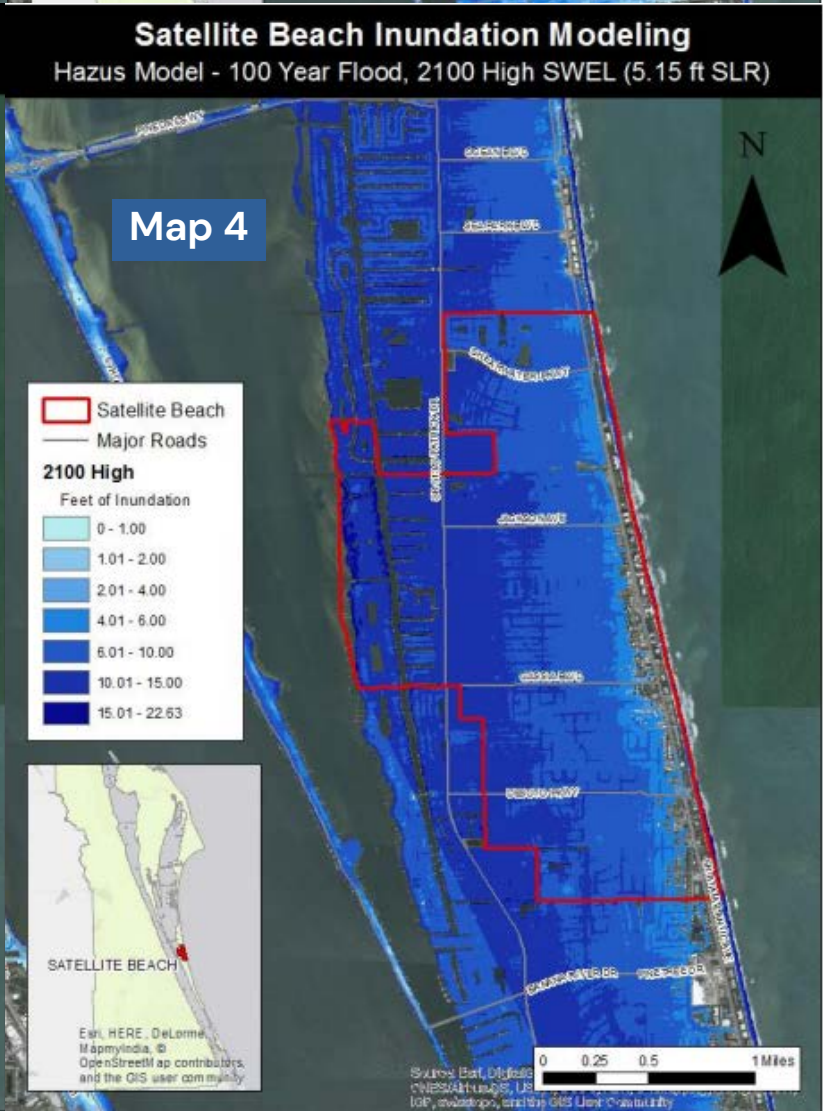
Further, Satellite Beach has exposure to more chronic flooding hazards that occur independently from tropical cyclones. For example, convective thunderstorms every summer have the potential to cause large amounts of runoff and flooding in low-lying or poorly drained areas. Lastly, as can be seen by the maps on the following page, SLR is expected to affect Satellite Beach especially hard. Caused by thermal expansion of warmer ocean waters and greater ocean water mass due to polar ice sheet melt, SLR is expected to exacerbate the already critical hazards known to Satellite Beach. SLR will reduce stormwater drainage capacity, increase beachfront erosion potential, and increasingly inundate low-lying land areas [35].

The next series of maps review the storm surge flood projections for a base year (Map 1), years 2040 (Map 2), 2070 (Map 3), and 2100 (Map 4) for the City of Satellite Beach. They were developed using HAZUS, FEMA's Multi-Hazard Assessment Tool by the University of Florida's Geoplan Center. The HAZUS software models specific return intervals of flooding (such as the 100-year return interval, also known as the 100-year storm or 1% annual probability storm, which was used for the following maps). By looking at these maps, one can see that a 100-year storm with almost 3 feet of SLR (2070 high) inundates more than 75% of the land area of Satellite Beach and half of that inundated area has a water depth of at least four feet. Hundreds of residents that live along the coast and the IRL will be impacted by storm surges and SLR [36].


Satellite Beach Inundation Modeling
Hazus Model - 100 Year Flood, Base SWEL
Map 1
N
Satellite Beach
Major Roads
Base SWEL
Feet of Inundation
0 - 1.00
1.01 - 2.00
2.01 - 4.00
4.01 - 6.00
6.01 - 10.00
10.01 - 15.00
15.01 - 22.63
SATELLITE BEACH


Satellite Beach Inundation Modeling
Hazus Model - 100 Year Flood, 2040 High SWEL (1.22 ft SLR)
Map 2
N
Satellite Beach
Major Roads
2040 High
Feet of Inundation
0 - 1.00
1.01 - 2.00
2.01 - 4.00
4.01 - 6.00
6.01 - 10.00
10.01 - 15.00
15.01 - 22.63
SATELLITE BEACH


Satellite Beach Inundation Modeling
Hazus Model - 100 Year Flood, 2070 High SWEL (2.85 ft SLR)
Map 3
N
Satellite Beach
Major Roads
2070 High
Feet of Inundation
0 - 1.00
1.01 - 2.00
2.01 - 4.00
4.01 - 6.00
6.01 - 10.00
10.01 - 15.00
15.01 - 22.63
SATELLITE BEACH
0 0.25 0.5 1 Miles


Satellite Beach Inundation Modeling
Hazus Model - 100 Year Flood, 2100 High SWEL (5.15 ft SLR)
Map 4
N
Satellite Beach
Major Roads
2100 High
Feet of Inundation
0 - 1.00
1.01 - 2.00
2.01 - 4.00
4.01 - 6.00
6.01 - 10.00
10.01 - 15.00
15.01 - 22.63
SATELLITE BEACH
0 0.25 0.5 1 Miles

Our Goals

R.1

Adapt city infrastructure to the impacts of climate change, including long-term sea level rise, flooding, and storm events

This goal pertains to all public infrastructure and aims at finding creative ways to protect the City against the effects of climate change. This can involve coastal resiliency efforts, erosion control efforts, flood-proofing, updating codes to withstand stronger storms, and efforts to mitigate power outages. Actions may involve both gray and green infrastructure.

R.2

Increase City's water retention and treatment footprint to reduce flooding events and improve water quality

This goal covers all land within the city including public & private. Methods to increase water retention may include converting surfaces from impermeable to permeable, increasing the absorbency of existing pervious surfaces, & collecting water. Strategies are outlined below.

R.3

Investigate techniques to protect public and private interests from adverse impacts from long-term changes in sea level

This goal covers both public and private land and may include any actions that protect and prepare all property in Satellite Beach for sea level rse as well as actions that secure the safety of future Satellite Beach residents.

Goal R.1

Adapt city infrastructure to the impacts of climate change, including long-term sea level rise, flooding, and storm events

Indicators

Pictured left to right:
Flooded sidewalk along South Patrick Dr. after Hurricane Ian, 2022, credit: Thea Baker and severe beach erosion during Hurricane Nicole, 2022, credit Dylan Hansen

13,000

linear feet of existing mangrove fringe

Other metrics to be collected in 2023-2026:

- Number of LEED equivalent municipal buildings
- Length of vegetated dune-line
- Length of sidewalk and roadways above MHW including SLR and storm surge

Goal R.1 Adapt City infrastructure to the impacts of climate change, including long-term sea level rise, flooding, and storm events

Sustainability Action R.1.1 Increase the amount of lagoon shoreline where feasible with mangrove plantings to serve as shoreline stabilization and provide storm protection.

Previous Progress:
Green Achievement Target #10 of the 2017 Satellite Beach Sustainability Action Plan was to improve ecosystem health, determine the current amount of city shoreline with mangrove coverage and convert 500 square feet of shoreline to begin to restore appropriate levels of mangrove coverage. A survey was completed and it was found that there was approximately 13,000 linear feet (LF) of existing mangrove fringe on Samsons Island and approximately 2,000 LF of available shoreline on residential and city properties for restoration. A 5-year old mangrove covers ~50 square feet.

Description:
The aerial root and canopy structure makes mangroves capable of reducing wave action, wind velocity, and storm surge. This will also filter nutrients from entering the Indian River Lagoon and provide habitat for many fisheries and other local fauna. The first step will be establishing 150 LF feet of mangrove shoreline within city limits. To assist in residential mangrove establishment, the City is providing a matching grant for residents to install native plants and mangroves on their properties.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works / Planning & Sustainability	Unknown	Year 2

Photo of mangrove-lined kayak trails on Samsons Island retrieved from: https://www.atlantices.com/project_samsonsisland.html

Goal R.1 Adapt City infrastructure to the impacts of climate change, including long-term sea level rise, flooding, and storm events

Sustainability Action R.1.2 Adjust required Design Floor Elevations to account for Sea Level Rise.

Previous Progress:
Current flood protection heights are determined using the base flood elevation (BFE) established by the FEMA Preliminary Flood Insurance Rate map (PFIRM). However, Satellite Beach has already experienced the devastation from coastal storms, most recently during Hurricane Nicole. Sea level rise (SLR) is projected to increase the depth, extent, and frequency of flooding from storm surge and tidal flooding. SLR will regularly inundate some low-lying areas as higher high tides overtop coastal edges, impacting sites currently out of the tidal inundation zone. The current Florida Building Code requires Design Floor Elevations (DFE) for buildings to be built at a level 1 ft above the base flood elevation (BFE) in flood hazard areas. This only accounts for current flooding levels and does not take into account future SLR. The tables below are from the 2019 Sea Level Rise Technical Planning Assessment (Evans et al) [35] and indicate chronic flood vulnerability of municipal property.

Description:
The City will use New York City's (or equivalent) Climate Resiliency Design Guidelines [37] to establish a new required Design Floor Elevation (DFE) for all new buildings in Satellite Beach. The new DFE will take into account future SLR scenarios extending out to 2070 and will add a freeboard (usually between 6 and 24 inches). This will involve adopting Comprehensive Plan policies and land development regulation to meet the desired elevation. Similar analysis can be completed for roadways.

Photo of sandbagging operation for Hurricane Ian, 2022, Credit: Nicholas Sanzone

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 2

Goal R.1 Adapt City infrastructure to the impacts of climate change, including long-term sea level rise, flooding, and storm events

Sustainability Action R.1.3 Investigate the current status of LEED-equivalency for each municipal building and create a framework for all new city buildings to be built as LEED-equivalent.

Previous Progress:
As part of the 2017 Sustainability Action Plan, Satellite Beach created Green Achievement Target #3 which was to "Achieve LEED-equivalent certification for at least one municipal building." This target has not been met yet.

Description:
The City will first investigate the status of LEED-equivalency for each municipal building and then create a checklist for possible ways to make each building at least LEED-certified equivalent. The City will also create a framework for all new city buildings to be built as LEED-equivalent.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 1

Sustainability Action R.1.4 Investigate solutions to reduce the duration and effects of power outages during storm events.

Description:
Satellite Beach is prone to storm events, with Hurricane Ian and Hurricane Nicole both hitting back to back in 2022. Hurricane Nicole, which hit as a Tropical Storm in early November 2022, caused nearly 90,000 power outages in Brevard County. While some short outages may not be an issue for some buildings, some critical facilities need power 24/7 to ensure safe municipal operations. To reduce the duration and effects of power outages during storm events, the City will research options for microgrid capabilities, battery storage, and strengthening existing infrastructure. Some options may be using electric vehicle batteries for solar storage or microgrid systems involving a gas generator, solar panels, and a battery system. The City will continually search for funding sources for such projects.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Unknown	Annually

Goal R.2

Increase City's water retention and treatment footprint to reduce flooding events and improve water quality

Indicators

5,314
linear feet of swales and ditches

17.8
miles of stormwater pipe

791
stormwater inlets & structures

7
stormwater ponds

Photo of Public Works department using the Vac-truck to clean a storm ditch / drain, retrieved from: https://satellitebeach.org/departments/public_works/photo_gallery.php#prettyPhoto

Other metrics to be collected in 2023 - 2026:

- Gallons of rainwater harvested annually
- Percent of homes with rain gardens
- Square feet of permeable pavement on public property

Goal R.2 Increase City's water retention and treatment footprint to reduce flooding events and improve water quality

Sustainability Action R.2.1 Investigate the most sustainable options for pavement, roofing, and other property features in regards to reducing stormwater runoff and heat island effect. Then consider regulatory framework to require new construction and redevelopment to use such features.

Description:
Alternatives to traditional pavement on our paved surfaces can help reduce runoff by infiltrating rainwater. These alternative methods may include pervious asphalt, pervious concrete, interlocking pavers, and plastic grid pavers. These pervious options come with extra maintenance efforts including vacuuming up to 2-4 times a year. Pervious pavements and other pavement options such as vegetated pavements or reflective pavements can also aid in reducing the heat island effect. Staff will continually research the pros and cons of each pavement and will consider regulatory framework to require new construction and redevelopment to use such features. Solar reflectance works similar on pavements as on roofs, and residents can reduce their electricity costs simply by choosing a lighter color roof. Staff will provide educational material to residents discussing roofing and pavement options to help residents make the most informed decisions.

Case Study [38]:
A 420-space cruise parking facility in Cape Canaveral becomes one of the largest porous concrete parking facilities in Brevard County

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

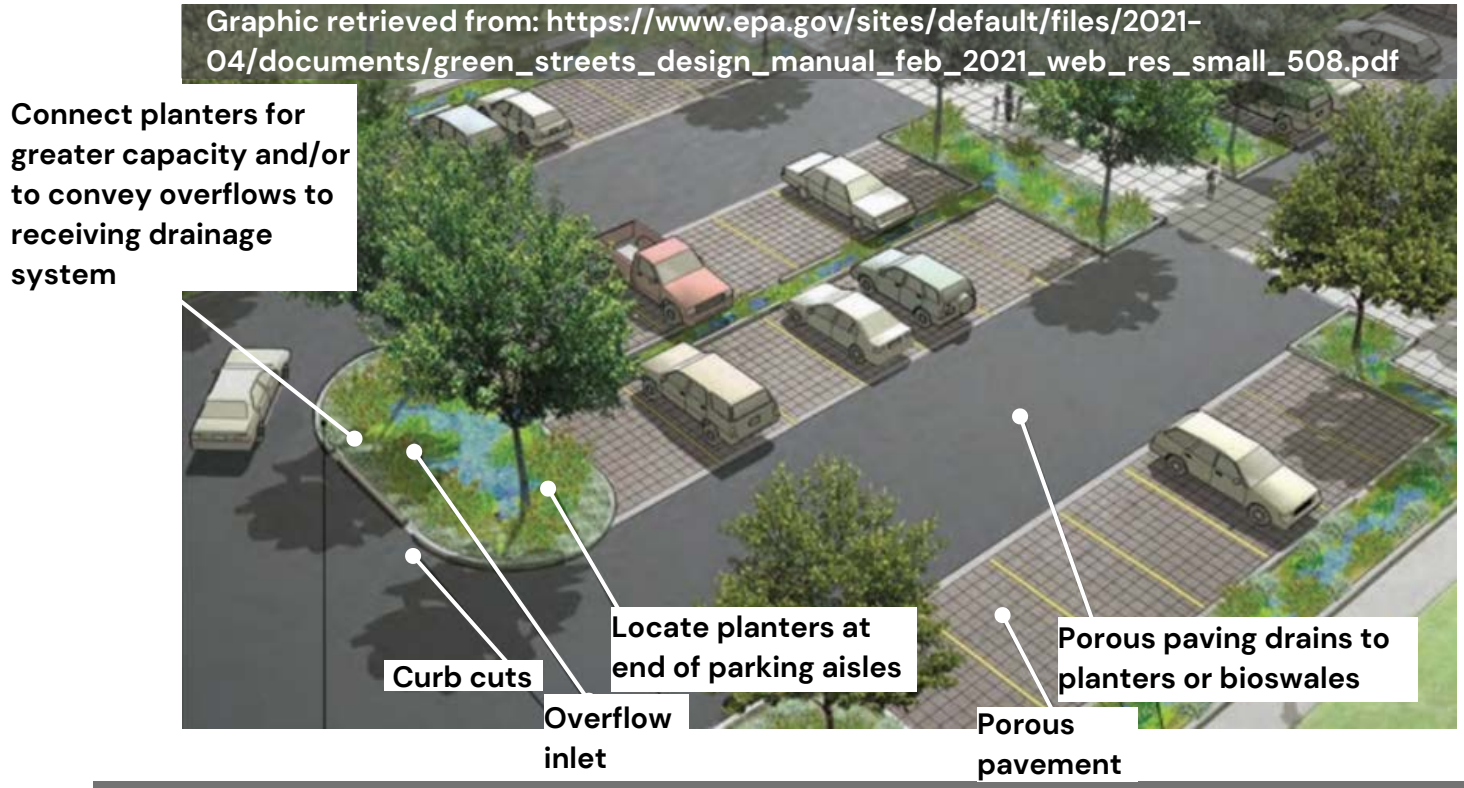
Goal R.2 Increase City's water retention and treatment footprint to reduce flooding events and improve water quality

Sustainability Action R.2.2 Incorporate Low Impact Development (LID) into municipal infrastructure improvements and promote the use of LID elements in city-wide development and redevelopment projects.

Description:

"The goal of LID is to reduce runoff and to mimic a site's predevelopment hydrology by infiltrating, filtering, storing, evaporating, and detaining stormwater runoff. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treat stormwater as a resource, rather than a waste product" [5]. All municipal infrastructure improvement projects will incorporate LID methods. Further, an audit of the City's Land Development Regulations (LDRs) will be performed to incorporate elements of LID into the City's LDRs. Examples include green roofs, tree planting, rain gardens, bioretention, infiltration, permeable pavement, and water harvesting. A recent EPA report titled Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices finds that total LID capital costs are lower than conventional methods, with savings ranging from 15 - 80% [39].

Graphic retrieved from: https://www.epa.gov/sites/default/files/2021-04/documents/green_streets_design_manual_feb_2021_web_res_small_508.pdf



Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works/ Planning & Sustainability	Free	Year 1-2

Goal R.2 Increase City's water retention and treatment footprint to reduce flooding events and improve water quality

Sustainability Action R.2.3 Establish a partial stormwater fee reimbursement program for residential and commercial property owners who incorporate Low Impact Development elements.

Previous Progress:

To aid in funding the maintenance, repair, and improvements to the drainage infrastructure, Satellite Beach created funding through implementation of the Stormwater Utility Fee. In Chapter 52, Section 52-14 of the City of Satellite Beach Code of Ordinance, it states that all fees collected for Stormwater Utility will be set aside for stormwater systems benefits.

Description:

Many other cities throughout the country have established stormwater fee credits to homeowners who incorporate certain best management practices, including Baltimore City. The City will evaluate those programs and create a similar one in Satellite Beach. This program will provide a credit on the homeowner's stormwater utility fee if they incorporate an LID element such as having a rain garden, planting a tree, or volunteering at a public event. Credits will vary based on effort.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	<$5,000/year	Year 1

Sustainability Action R.2.4 Explore feasibility of ecological improvements to current stormwater ponds.

Description:

Ecological improvements to stormwater ponds may include muck removal, the addition of beemats, basking logs (platforms), and littoral zone planting. The City will continually seek ways to improve existing stormwater systems with ecological improvements.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Unknown	Year 1

Goal R.2 Increase City's water retention and treatment footprint to reduce flooding events and improve water quality

Sustainability Action R.2.5 Incorporate master planning into stormwater project prioritization and sequencing.

Description:
Insufficient storm water systems with high rain fall rates can impact flooding potential and increase vulnerability and risk [34]. In 2011, Satellite Beach published its Stormwater Quality Master Plan, and in 2019, the City published an update. This plan will be periodically updated to allow for project prioritization and sequencing.
Reference: 2011 Satellite Beach Stormwater Quality Master Plan [40]
Reference: 2019 Satellite Beach Stormwater Master Plan Update [41]

Status	Responsible Department	Cost	Timeframe
In Progress	Public Works	Free	Ongoing

Sustainability Action R.2.6 Investigate new rainwater collection technologies.

Description:
Rainwater collection can come in many forms from large cisterns to underground stormwater chambers. The two basic ways of harvesting rainwater is from surface runoff and roof catchment. Collecting rainwater can aid in lessening effects of flooding and reducing water costs. The City will continually evaluate rainwater collection technologies and seek to find ways to deploy them locally.

Case Study [42]:
Canaveral City Park Exfiltration System — This project included the installation of over 4,000 underground stormwater chambers to collect and infiltrate stormwater from the surrounding 30-acre urban area. The chambers were installed in 2016 beneath both ballfields and have a storage capacity of over 900,000 gallons. In the near future, excess reclaimed water from the Community Services Facility will be pumped to the chambers in lieu of discharge to the Banana River.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

Goal R.3 Investigate techniques to protect public and private interests from adverse impacts from long-term changes in sea level

Sustainability Action R.3.1 Enforce regulations or offer incentives to encourage residents/ businesses to shift behavior to prepare for future climate change impacts.

Description:
Staff will consider options for encouraging residents and businesses to shift behavior for future climate change impacts. Methods may include limiting development or redevelopment in areas that are particularly vulnerable to flooding, erosion, and winds. Considerations will also be made to offer permit fee reductions for elevating or flood- proofing structures.

Photos of Hurricane Ian damage in 2022 on west coast of Florida, credit: Left: Ricardo Arduengo, Right: Joe Raedle

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Ongoing

Goal R.3 Investigate techniques to protect public and private interests from adverse impacts from long-term changes in sea level

Sustainability Action R.3.2 Investigate land development regulation amendments that allow for resiliency development strategies.

Description:
Changes to land development regulations will be considered if they may help protect the public from long-term changes in sea level. Examples may include allowing for breakaway garages, elevated buildings, etc.

Photo of Hurricane Ian damage in 2022 on west coast of Florida, credit: Joe Raedle

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

Goal R.3 Investigate techniques to protect public and private interests from adverse impacts from long-term changes in sea level

Sustainability Action R.3.3 Work with public entities and utility providers to ensure resiliency is being prioritized in infrastructure projects.

Description:
Satellite Beach does not own any of their utilities (water, sewer, or electricity) and is therefore reliant upon the utility providers to make adjustments necessary to infrastructure to account for sea level rise, salt-water intrusion into the groundwater, and increased flooding events. As opportunities arise, the City will advocate for resiliency in all infrastructure improvement projects.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Annually

Sustainability Action R.3.4 Provide support to advocacy groups looking to promote legislation that enhances resiliency.

Description:
Often we can be at a standstill at promoting resiliency if state and federal legislation stands in the way. Many advocacy groups are already promoting resiliency legislation and regularly need support from local governments. The City will provide that support when such legislation aligns with the needs to protect the current and future residents of Satellite Beach.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Ongoing

CATEGORY 5:

Natural Resources

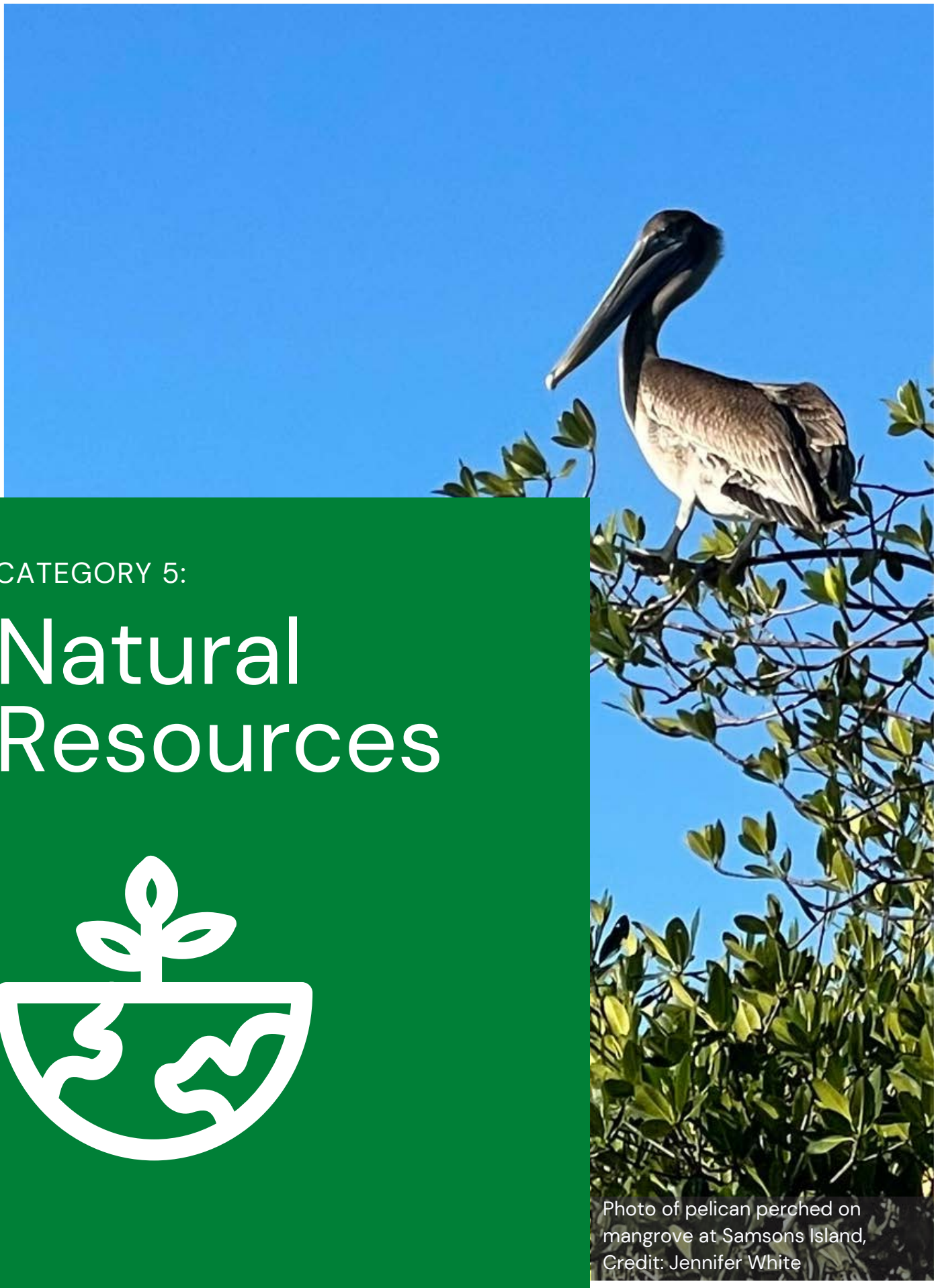


Photo of pelican perched on mangrove at Samsons Island, Credit: Jennifer White

Category 5: Natural Resources

Satellite Beach and the Indian River Lagoon (IRL)
The IRL is a 156-mile-long lagoon system and is home to over 4,400 species of plants and animals, making it one of the largest and most diverse lagoon ecosystems in the Northern Hemisphere. The entire lagoon contains 27% of Florida's eastern coastal salt marshes. The City of Satellite Beach relies on it for recreation, fishing, tourism, and mental health. The entire IRL fishery provides an estimated 50% of the east Florida fish catch and $30 million in annual revenue [5]. Satellite Beach has approximately 8.5 miles of coastline bordering the IRL, including 1.3 miles of undeveloped coastline on Samsons Island and 7.2 miles of developed residential coastline along the City's 13 finger canals and 2 developed spoil islands.

Unfortunately, "throughout its recorded history, there have been occasions when unusual amounts of pollutants have entered the system and resulted in fish kills, algal blooms and changes in water clarity. The lagoon system has the natural capability to absorb a certain amount of these pollutants; however, when overloaded, the lagoon suffers.....directly or indirectly, we are all responsible for maintaining the health of the Indian River Lagoon system. As residents, as government leaders, as visitors and as responsible individuals we can each do our part to effect positive changes within the lagoon" [5, p. 3].

Protecting our City's natural resources has compounding benefits not just to wildlife, but to current and future human life. This Category shall be used to protect and restore natural resources by enhancing, and restoring plant and animal biodiversity, water systems and ecosystem services. The natural resources of Satellite Beach provide many ecosystem services that humans rely upon. The native plants provide food sources for pollinators, which in turn pollinate our local food sources. Plants and trees sequester carbon out of the atmosphere, reducing the atmospheric greenhouse gases in our area, and also produce oxygen which we rely on to breathe.

Recreation / Tourism

Carbon Sequestration

Food

Coastal Protection

Beautification

Biodiversity

Oxygen

Plants themselves can be food sources for humans. Plants such as mangroves can also provide coastal protection, erosion control, and water purification (Barbier et al., 2011). The nearby waterways provide recreation activities, economic activity from tourism, and provide a habitat for many human food sources including fish and crabs. The City's water systems and natural land systems also provide a myriad of aesthetic and mental health benefits as well.

Satellite Beach is home to diverse plant and animal life. The 'Biodiversity Hot Spots' in the map to the right refer to areas containing 8 to 13 different species of animals in one defined geographic location as identified in the ECFRPC's Strategic Regional Policy Plan in 2009 [35].

In an area where humans have taken over most of the landscape for personal benefit, it is essential to preserve what little green space we have left and to restore the waterways we rely upon. Preserving biodiversity (the existence of many different types of plants, animals and habitats) is paramount in preserving ecological systems and future resources for all local life.

Map retrieved from: https://www.perilofflood.net/_files/ugd/4c4fbd_1e2d3aa3e7a54c94a9e18774877597d5.pdf

Our 2022 Goals

N.1

Reduce Harmful Impacts to the Indian River Lagoon

This goal covers all actions and efforts that may reduce all forms of pollution into the Indian River Lagoon, including air pollution, point-source pollution, groundwater pollution, stormwater pollution, and oxygen-depletion pollution. This goal also covers any other actions that may improve water quality in the Indian River Lagoon including restoration projects.

N.2

Improve conservation of native flora and fauna

This goal pertains to the protection of all animal species, including but not limited to endangered species, the conservation and restoration of natural lands, and the improvement of overall plant and animal diversity. Methods may include increasing the amount and improving the quality of wildlife habitat, as well as increasing the density and variety of native fauna.

Photo of native prickly-pear cactus flowering, Credit: Jennifer White

Goal N.1

Reduce Harmful Impacts to the Indian River Lagoon

Indicators

Photo of xeriscaping at City Hall, Credit: Thea Baker

88%

Municipal buildings have Xeriscaping

37

Lagoon Friendly Lawns in Satellite Beach in 2022

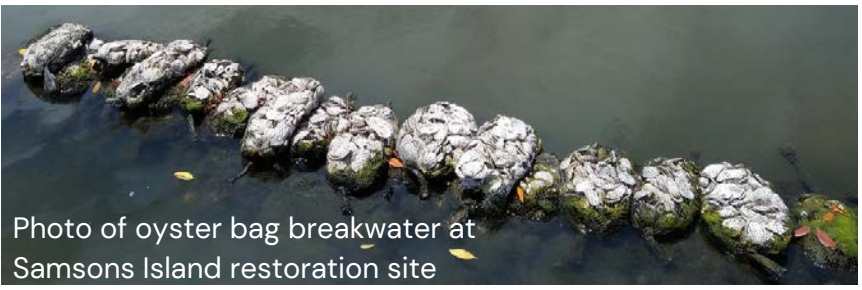


Photo of oyster bag breakwater at Samsons Island restoration site

30

Acres of habitat restoration in the IRL

203,722

cubic yards of muck in finger canals & Grand Canal

Other metrics to be collected in 2023:

- Amount of fertilizer used on City property

13

Nutrient separating baffle boxes

Photos left to right: (1) new baffle box; (2) Trash that was caught by a baffle box before it made it to the lagoon, retrieved from: https://satellitebeach.org/departments/public_works/photo_gallery.php#prettyPhoto

Goal N.1 Reduce Harmful Impacts to the Indian River Lagoon

Sustainability Action N.1.1 Raise awareness about Lagoon Friendly Lawns.

Description:
Raise awareness about Lagoon Friendly Lawns by partnering with Keep Brevard Beautiful (KBB) and University of Florida, Institute of Food and Agricultural Sciences (UFIFAS) to host a yearly Lagoon Friendly Lawn workshop. These workshops will encourage planting of native species and construction of bioswales to reduce fertilizer impacts to the Indian River Lagoon.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

Sustainability Action N.1.2 Establish a pilot canal for the City's new Adopt-A-Canal Program.

Description:
The City of Satellite Beach Adopt-a-Canal program is designed to build community engagement while promoting environmental conservation and canal management. Program efforts will involve a 6-element approach:

1. Pet Waste Pledge by canalfront homeowners;
2. Native plant seawall vegetative buffer by canalfront homeowners;
3. Artificial reef deployment on canalfront docks and seawalls;
4. Canal aeration;
5. Water quality testing and monitoring; and
6. a Fertilizer-Free Pledge.

The City will provide a $500 matching plant grant for canalfront homeowners to establish native vegetative buffers. The City will start with a pilot canal to establish effectiveness and expects to expand to all City's canals by 2030.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	<$10,000	Year 1

Goal N.1 Reduce Harmful Impacts to the Indian River Lagoon

Sustainability Action N.1.3 Establish a baseline data set for nutrients in the Indian River Lagoon.

Description:
In order to determine a baseline dataset for nutrients in the Indian River Lagoon, the City will collect and test grab samples in every finger canal seasonally.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Stormwater	$5,000-$20,000 annually	Year 1

Sustainability Action N.1.4 Seek funding opportunities to perform finger canal muck dredging within the next 10 years.

Description:
Muck is fine-grained organic rich sediment with a high water content, made up primarily of clay, sand and organic matter (decaying plant material). Because of its high water and clay content, muck looks like black ooze. Although it covers an estimated 15,900 acres of lagoon bottom in Brevard County, muck is not the natural bottom of the lagoon. It destroys habitats by inhibiting growth and depletes oxygen in sediments and surrounding waters. It is a result of the accumulation of added nutrients and pollutants, including grass clippings, vegetation, and decomposing algae blooms [3]. One proven method of muck removal is dredging, which is already being completed in many areas of the lagoon. The City will continually seek funding sources to cover some or all of the cost of muck removal in the City's finger canals.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Stormwater	Unknown	Year 1-3

Goal N.1 Reduce Harmful Impacts to the Indian River Lagoon

Sustainability Action N.1.5 Continue to access Local, State and Federal funds for seagrass plantings and other lagoon restoration and enhancement projects.

Previous Progress:
Green Achievement Target #18 from the 2017 Sustainability Action Plan was to Identify locations within the Indian River Lagoon that are suitable for the development of oyster beds and implement as feasible. The City received NEP funding in 2019 to establish the Samsons Island Restoration Project on the southwest corner of Samsons Island. Further funding for the project was received by the Tourism Development Council in 2021 and 2022. A one-acre spatial mosaic of three keystone species native to the IRL was created, including an oyster breakwater system, broadly dispersed clams, and 9 transects of sea grass plantings. The project is currently in Phase 3 which involves a robust monitoring component to determine success and an educational outreach and volunteer engagement component. Volunteers can participate in weekly citizen science monitoring until at least September 2023 and potentially later if further funding is received.


Thea Baker


Nicholas Sanzone


Photo Credit: Dylan Hansen

Description:
Staff will continually search for and apply for funding opportunities to improve upon existing or create more lagoon restoration projects.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free (funded through grants)	Ongoing

Goal N.1 Reduce Harmful Impacts to the Indian River Lagoon

Sustainability Action N.1.6 Transition to compost-extract fertilizers on City-owned property where feasible.

Previous Progress:
The City of Satellite Beach transitioned from synthetic fertilizers to slow-release organic fertilizers on all City property. Further, the City is testing out a compost-based fertilizer on one of the sports fields.
Description:
Depending on resource availability and success of previous applications, the City will transition to compost-extract fertilizers on City properties where feasible. This will likely start at facility properties and transition to sports fields last.

Status	Responsible Department	Cost	Timeframe
In Progress	Public Works	Unknown	Year 2

Sustainability Action N.1.7 Maintain compliance with NPDES and BMAP requirements to promote water quality improvement and improve habitat in the Indian River Lagoon.

Description: The City implements the Banana River Lagoon Basin Management Action Plan (BMAP) to reduce nutrient loading of total nitrogen (TN) and total phosphorous (TP) to the Lagoon in accordance with total maximum daily load (TMDL) requirements. The Lagoon is considered impaired for water quality. A TMDL is a scientific determination of the maximum amount of a given pollutant that a surface water can absorb and still meet the water quality standards that protect human health and aquatic life. The City's load requirements are a reduction of 13,480 pounds per year of TN and 2,026 pounds per year of TP. The City implements stormwater quality improvement projects and public education and outreach initiatives to help meet these goals and reports the reductions to the Florida Department of Environmental Protection (FDEP) annually. Current and future water quality projects are essential to BMAP/TMDL compliance.

Status	Responsible Department	Cost	Timeframe
In Progress	Stormwater	Free	Ongoing

Goal N.2

Improve conservation of native flora and fauna

Indicators

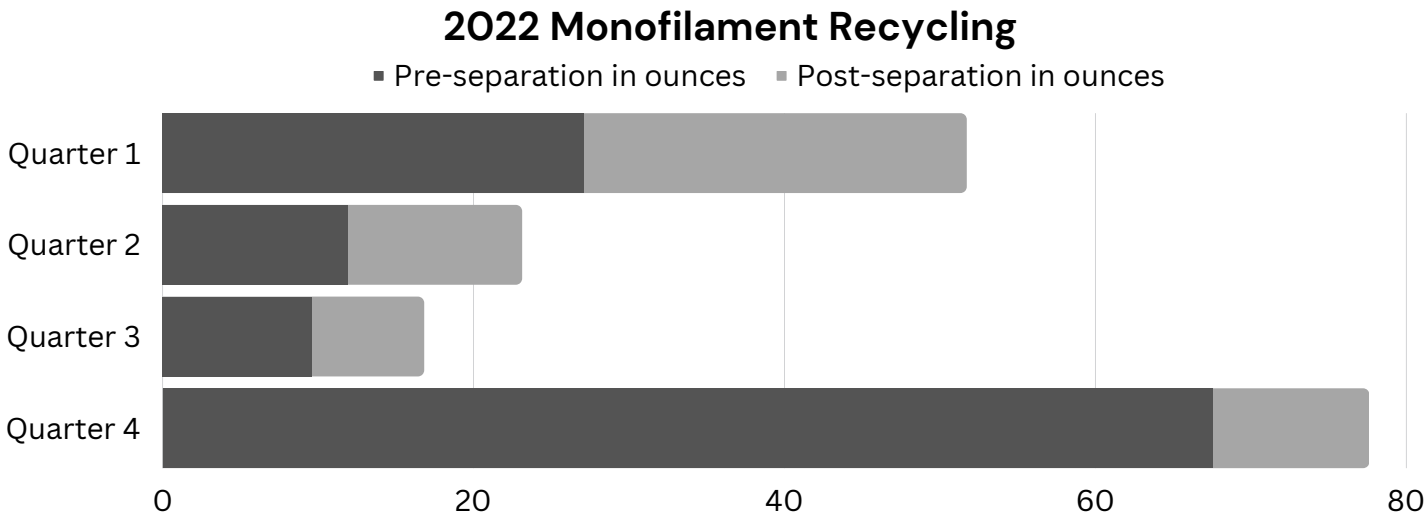
Photo of sea oat planting event in2022, Credit: Jennifer White

2,000

Sea oats planted in 2022

300

volunteer hours in 2021 dedicated to invasive species removal or similar work on Samsons Island



Other metrics to be collected in 2023:

- Number of gopher tortoise burrows on Samsons Island
- Percent of beachfront property with sea-turtle friendly lighting
- Number of Community Wildlife Certified properties in Satellite Beach

Goal N.2 Improve conservation of native flora and fauna

Sustainability Action N.2.1 Establish a shorebird nesting site by 2025.

Previous Progress:
In March of 2022, a large colony of least terns (*Sternula antillarum*) began nesting on a construction site located along the west side of Highway A1A in Satellite Beach. There were over 200 nests, and at one point it was the largest colony on the East Coast of Florida. Because the construction site will continue to be built out and there will be no place for the birds to nest, the City decided to investigate ways to help the birds for future nesting seasons. The City of Satellite Beach is working towards creating a permanent nesting location for migratory shorebirds on a 1.5-acre City-owned vacant beachfront parcel (1285 Hwy A1A). Through collaboration and guidance with FWC and FDEP shorebird biologists, the site was deemed potentially suitable habitat for migratory shorebirds, and the proposal was brought to City Council on May 18, 2022. With a unanimous vote of approval, the project will be moving forward as one of Florida's first beachfront restoration sites in a built environment.

Description:
In order for the site to be appealing to migratory shorebirds, a majority of the vegetation will need to be removed. The site will need to be fenced in to protect the nesting birds from humans, but the beach access on the south side of the property will remain. All dune vegetation will remain in place.


Photo Credit: Joel Cohen


Photo Credit: Jennifer White


Photo Credit: Jennifer White

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	$20-$50,000	Year 1-3

Goal N.2 Improve conservation of native flora and fauna

Sustainability Action N.2.2 Restructure Monofilament Tube Program.

Previous Progress:
The City originally partnered with Brevard County Natural Resources and Berkley Conservation Institute to collect and recycle used monofilament fishing line in a monofilament tube program. The tubes were set up at many beach crossovers, but after a while the original program stopped and needs to be revamped.

Description:
By the end of 2023, there will be monofilament collection tubes at every beach crossover, Desoto Pond, the Sports Park Pond, City Hall Pond, and one at each of the 3 docks at Samsons Island. They will be cleared monthly and the gear will be weighed pre and post separation for recycling. Metrics will be collected and added to the City website annually.

Photo of Jennifer White at City Hall's monofilament tube (2022), Credit: Jessica Kennedy

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Annually

Goal N.2 Improve conservation of native flora and fauna

Sustainability Action N.2.3 Perform sea turtle lighting surveys and public outreach each year during turtle nesting season.

Description:
Sea Turtle Nesting Season is between March 1st and October 31st. A pre-season, post-season and monthly surveys during nesting season will need to be completed.

Photo of a rescued sea turtle in Satellite Beach, Credit: Jennifer White

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

Sustainability Action N.2.4 Increase public outreach about invasive species management.

Description:
Methods to increase public outreach about invasive species may include placing a "Wanted Poster" in every BeachCaster or on social media and establishing a yearly volunteer invasive species cleanup on national Weed Wrangle Day in February.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

Goal N.2 Improve conservation of native flora and fauna

Sustainability Action N.2.5 Increase and enhance endangered species habitat.

Description:
Methods to increase and enhance endangered species habitat may include creating a shorebird platform, eagle platform, and habitat on Samsons Island for gopher tortoises, performing prescribed burns, establishing new conservation easements, and erecting bat houses.


Photo of a Bald Eagle nesting on Satellite Beach light tower


Photo of a rescued sea turtle making it to sea: Jennifer White


Photo of a smiling gopher tortoise: Susan Skinner


Photo of a monarch caterpillar: Jennifer White

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Variable	Ongoing

Goal N.2 Improve conservation of native flora and fauna

Sustainability Action N.2.6 Measure and track the amount of sea oats and other native species that are planted each year due to the annual Sea Oat Planting event and the seed harvesting program.

Previous Progress:
Through a seed harvesting program which began in 2006, a small percentage of sea oats and other native plant seeds are collected by hand via a Department of Environmental Protection permit, and grown in a nursery. The City then receives back a portion of the plants grown, or other native plants to enhance native diversity on City beaches. The City of Satellite Beach began its annual sea oat planting program in 2022. This is a community engagement activity in which volunteers are encouraged to come out and plant sea oats along the City's dune system. Sea oats play a vital role for dunes through their extensive fibrous roots that together form a type of lattice-work. Winds cause sand to collect around the base of the plants which in turn increase the expansion of both the dunes and the plants. Dunes function as the first line of defense against wave energy and flooding through propagating new growth via underground rhizomes. The goal of this annual event is to inform the public on the critical importance of maintaining healthy sand dunes, while aiding in the stability of our local beaches. Seat oats are protected by law, it is illegal to pick or tamper with sea oats. In 2022, 2,000 sea oats were planted just north of the Hightower Beach Crossover.

Description:
The City will continue its seed harvesting and Sea Oat Planting events every year, when feasible, and will measure the amount of dune plantings each year, with the hopes of growing the program year after year. The City will also use the City's website to catalog data for seed harvesting and dune planting.

Photo of sea oat planting event in 2022,
Credit: Jennifer White

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Annually

Goal N.2 Improve conservation of native flora and fauna

Sustainability Action N.2.7 Update and enact the Beach and Dune Management Plan.

Description:

Through natural and human caused disturbance, much of the coastal dune systems have become damaged and fragmented. Plant diversity is greatly reduced causing monocultures of species that thrive within a disturbed landscape. Restoring heathy vegetative communities is critical for long term resilience of the coastal dune system. A Beach and Dune Management Plan will incorporate an adaptive management framework that focuses on identifying and managing ecological functions within the system and subsequently improving dune habitat quality and reduction of negative impacts to resources, from a bottom-up approach. This will include wildlife and vegetative monitoring, restoration activities, and making revisions as needed. This Plan will also form a basis for coastal resiliency management of Satellite Beach's oceanic coastline.

Photo of sea oats on Satellite Beach dune, Credit: Jennifer White

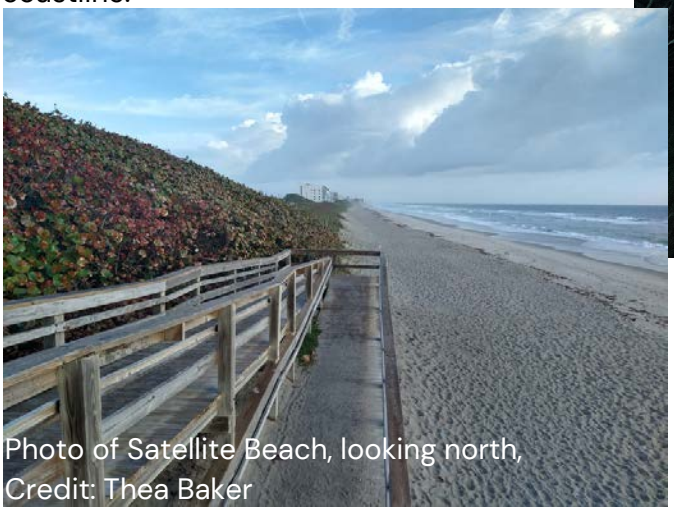


Photo of Satellite Beach, looking north, Credit: Thea Baker

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 1-2

Goal N.2 Improve conservation of native flora and fauna

Sustainability Action N.2.8 Pursue Community Wildlife Habitat Certification for the City through the National Wildlife Federation (NWF) by 2025.

Description:

NWF Community Wildlife Habitats earn "Certification Points" by providing habitat for wildlife throughout the community. Communities do this by (1) certifying individual properties like backyards, school grounds, public parks, community gardens, places of worship, and businesses, as National Wildlife Federation Certified Wildlife Habitats®. Each individual certified site within the community provides the four basic elements that all wildlife need — food, water, cover, and places to raise young—and integrates sustainable gardening practices such as using rain barrels, reducing water usage, removing invasive plants, using native plants, and eliminating pesticides. Second (2), communities earn education and outreach points through a flexible checklist that includes educating citizens at community events, hosting a native plant sale, organizing clean ups, bringing new partners to the effort and hosting workshops. The City will pursue Community Wildlife Habitat Certification by designating public facilities as habitat, encouraging schools, businesses, and homeowners to certify habitat through the NWF and educating the community on enhancing habitat for wildlife [44]. Certification takes two years on average.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Year 1

Photo of Atala Butterfly on Coontie plant,
Credit: Susan Skinner

Photo of White Peacock Butterfly,
Credit: Susan Skinner

Goal N.2 Improve conservation of native flora and fauna

Sustainability Action N.2.9 Update City Ordinance to expand the list of nuisance plants.

Previous Progress:
According to the City's Land Development Regulations, Sec. 30-706. - Nuisance trees, the following trees are considered non-native, noxious, invasive species and shall be removed from all properties within the city on or before January 8, 2016: Brazilian pepper (*Schinus terebinthifolius*), Melaleuca (*Melaleuca quinquenervia*), and Australian pine (*Causarina equisetifolia*).

Description:
The City wishes to revamp the current City Ordinance listing nuisance trees to be expanded to other species besides just trees and to include at a minimum Carrotwood (*Cupaniopsis anacardioides*), Mexican Petunia (*Ruellia simplex*), and Snake Plant (*Dracaena trifasciata*). ***Reference:*** *Sec. 30-706. - Nuisance trees.*

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Year 1

Sustainability Action N.2.10 Update and enact Samsons Island Management Plan and Gopher Tortoise Habitat Management Plan.

Previous Progress:
Samsons Island is a 52-acre spoil island owned by the City of Satellite Beach and developed as a public passive park and nature preserve. After the island's creation in the 1950s, exotic vegetation began to take over. Since 1990, thousands of volunteer and staff hours have gone in to clearing the exotic vegetation, introducing native vegetation, and providing park amenities such as picnic areas and grills. However, it has become clear that the island cannot be managed with volunteer efforts alone.

Description:
The Samsons Island Management Plan will involve completing detailed flora inventories, mapping gopher tortoise burrows, preparing an invasive species removal plan, and a native flora planting plan. The objective of the plan is to create an all-encompassing and long-term management plan for the restoration and maintenance of Samsons Island, and to ensure adequate protection of existing native and/or endangered and threatened species on the island. The plan will be drafted in 2023 and complete by 2024.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Year 1-2

CATEGORY 6:

Quality of Life

Photo of community members playing at Desoto Park, Credit: Recreation Department

Category 6: Quality of Life

A satisfactory quality of life is affected by many factors including access to healthy food, adequate means of transportation, economic stability, a healthy environment, community-based activities, and a safe and beautiful place to live. The City of Satellite Beach has always put the safety and well-being of its residents above all else. In 2021, it was named the safest city in Florida for the 3rd year in a row. The City also established the Community Medic Program in 2015 which offers free in-home health evaluations and services for City residents who have limited mobility, are homebound, and/or have chronic health conditions that are self-managed. The City also looks out for the mental health of its residents by hosting over 25 annual events and 8 recurring events, as well as being home to over 147 acres of land dedicated to recreational purposes.

Photo of Shane Martin, City Arborist, planting a tree on Earth Day

However, the City recognizes a need for improvement in other areas. For instance, the urban heat island effect is a growing concern. The urban heat island effect occurs when daytime temperatures are about 1–7°F higher in highly developed areas lacking green space. Man-made structures such as buildings, roads and parking lots absorb and re-emit the sun's heat more than natural landscapes such as lawns, parks and water bodies [45]. As temperatures continue to rise in general, it will be essential for the City of Satellite Beach to investigate means to reduce the heat island effect due to existing and future development.

Graphic retrieved from: https://www.epa.gov/sites/default/files/2017-05/documents/reducing_urban_heat_islands_ch_5.pdf

Another area for the City to focus on is public transportation. Few public transportation options are available within the City of Satellite Beach. Although most Satellite Beach residents own a car, public transportation for those that do not is limited. For those wishing to utilize the resources that the neighboring city of Melbourne has, there are too few opportunities to travel there without a car. Further, there are no public transportation options for traveling within the City, except north and south down Highway A1A. The City of Satellite Beach will continue to investigate options to preserve and expand all activities that improve residents' quality of life.

Our 2022 Goals

Q.1

Meet the critical needs of Satellite Beach Residents

Critical needs of Satellite Beach residents include affordable and safe housing, decent job opportunities, good health, affordable transportation options, a sense of community and mental well-being. This goal includes any actions that improve the health, safety, and economic prosperity of Satellite Beach residents.

Q.2

Invest in green spaces to reduce heat island effect, encourage outdoor activity, and beautify Satellite Beach

This goal includes any actions that involve improvement to green spaces, or addition of green spaces within Satellite Beach for the purpose of improved recreation, comfort, and mental health of Satellite Beach residents. Methods may include park improvements, planting trees, and converting developed land to natural recreational land.

Q.3

Create a more Walkable / Bikeable Community

This goal covers all actions that promote walking or biking. This may involve adding sidewalks, widening sidewalks, adding bike-friendly infrastructure, and beautifying existing and future pathways.

Q.4

Create pathways to a more localized food system

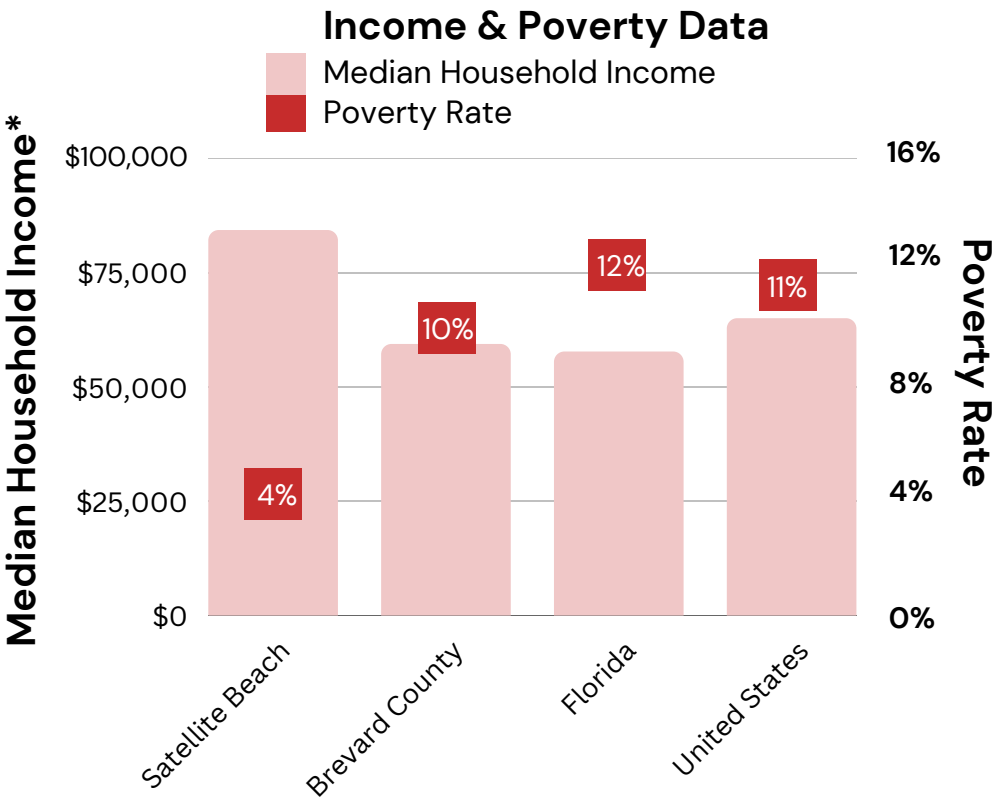
This goal covers any actions that promote the growing of food within Satellite Beach or nearby land and the creation of food products within Satellite Beach. Methods may include promoting backyard gardens, buy-local campaigns, and growing more food on public property.

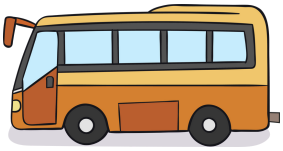
Photos top to bottom: (1) eggplants growing at the community garden, (2) beach wheelchair for check-out from the Fire Department, (3) trees being planted by volunteers at City Hall, (4) vegetable vendor at the farmer's market, (5) bench and walking trail at Desoto Park

Goal Q.1

Meet the critical needs of Satellite Beach Residents

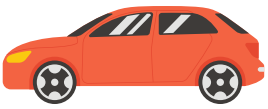
Indicators





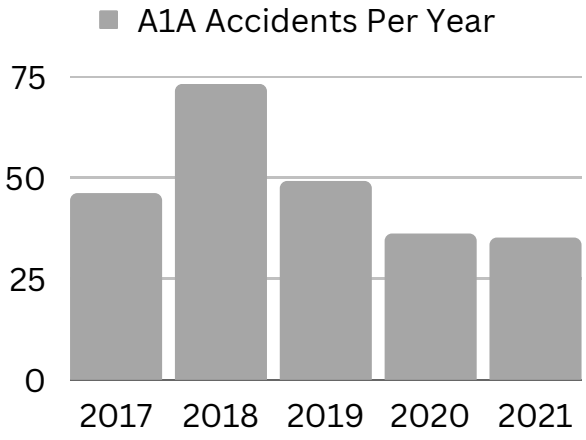
1:11

Time it takes to take public transit from City Hall to Melbourne Library (2022)



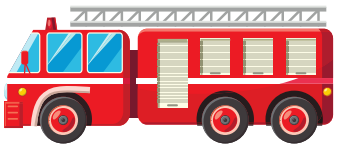
0:26

Mean travel time to work (2016-2020)



254

Number of Employer Firms (2017)



3:55

Fire Department arrival time for medical calls (2021)

Goal Q.1 Meet the critical needs of Satellite Beach Residents

Sustainability Action Q.1.1 Continue and expand the Community Medic Program.

Previous Progress:
The Community Medic Program was established in 2015 and continues to offer free in-home health evaluations and services for City residents who have limited mobility, are homebound, and/or have chronic health conditions that are self- managed. The program provides home visitation, wellness examinations, monitoring of medication, and nutrition compliance.

Description:
Continue and expand the Community Medic Program making available integrated routine, urgent, and emergency health services to residents with chronic health issues and investigate means to do so at reduced or no cost to City government.

Photo of Satellite Beach Cares, the 501(c)3 nonprofit of the Satellite Beach Volunteer Fire Department delivering meals during December 2022, Credit: Satellite Beach Fire Department

Status	Responsible Department	Cost	Timeframe
In Progress	Fire	Unknown	Ongoing

Goal Q.1 Meet the critical needs of Satellite Beach Residents

Sustainability Action Q.1.2 Preserve and improve on the assortment of City managed, sponsored, and supported recreational and community activities.

Previous Progress:
The City of Satellite Beach is host to many community and recreational activities that play an impactful role in the mental health and well-being of residents. The Satellite Beach Police Department has the "Stop by and Say Hi Program" where volunteers provide companionship to any resident that signs up. Our compassionate volunteers provide laughter, brighten a day, and let our residents know they are not forgotten and that we care in Satellite Beach. We also offer basic resources and support. The program is free of charge and confidential. Further, to promote a sense of community, the City hosts or cohosts over 25 annual as well as 8 recurring events throughout the year.

Description:
The City will continue to support the mental health and well-being of residents through creating a sense of community and by preserving and improving on the vibrant assortment of City managed, sponsored, and supported recreational and community activities.

Photo of one of Pelican Beach's many events, Credit: Satellite Beach Recreation Department

Status	Responsible Department	Cost	Timeframe
In Progress	Recreation	Not Calculated	Ongoing

Goal Q.1 Meet the critical needs of Satellite Beach Residents

Sustainability Action Q.1.3 Investigate means to make it affordable for those providing important services to City residents to live within the City.

Description:
Currently, there is a growing housing shortage and increase in home and rent values across the U.S. In 2022, home prices are marked as being up more than 30% than previously noted, a trend seen in Satellite Beach as well. As home and rent prices increase, it becomes harder and harder for the broad population to afford housing. Particularly, those employees providing important services to the City, such as City employees or service employees, may not be able to afford to live within the City. The City will investigate means to make it affordable for those providing important services to City residents to live within the City. This will start with constructing a plan to (1) identify any housing needs to existing residents who work within the City; and to (2) eventually expand to determine barriers to entry for service providers or other city-wide employees who cannot afford to live within the City.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Annually

Sustainability Action Q.1.4 Investigate means to enhance the profitability and sustainability of businesses within the City which provide services to residents of the City.

Description:
The economic success of businesses within Satellite Beach is of vital importance to the City itself. Local businesses supply jobs and services to residents and visitors. Service businesses necessary for a City to run include grocery stores, convenience stores, gas stations, pharmacies, doctors' offices, law offices, and hardware stores, as well as others to promote social well-being including garden centers, coffee shops, restaurants, beauty salons, auto repair shops, and gyms. While the market plays a critical role in determining what businesses end up where, the City of Satellite Beach can promote certain organizations that provide essential services and create valuable, well-paying jobs. The City can also aid in cultivating partnerships between government, business, and the non-profit sector. Lastly, the City can provide support for small and local businesses through its procurement processes.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Ongoing

Goal Q.1 Meet the critical needs of Satellite Beach Residents

Sustainability Action Q.1.5 Investigate means to improve first mile and last mile access to mass transit to all residents.

Previous Progress:
The SCAT bus system has 8 stops along A1A. There are no bus stops anywhere else in Satellite Beach. The bus system provides transportation options from the City, up north to Cocoa Beach, and down south to Indian Harbour Beach.

Description:
One of the most pressing challenges facing public transportation today, especially in Satellite Beach, is the "First and Last Mile Problem," which is the distance a commuter needs to travel from a transit stop to their destination, or vice versa. While the issue of first and last mile access can be a complicated one, there are many methods to investigate including bike-share programs, rideshare programs and smaller-scale/ city-wide mass transit options. One smaller-scale/ city-wide mass transit option would be for the City to seek a partnership with Beep to pilot an Autonomous Vehicle in Satellite Beach to understand the feasibility of using autonomous vehicles in Satellite Beach.

Case Study [46]:
Lake Nona – Within a 17-square-mile development, "Move Nona" has created a highly efficient mobility network within a planned community that connects residential, commercial, retail, recreational, and medical services. The autonomous vehicle service is currently the largest and longest autonomous vehicle network in North America. The alternative mobility network consists of 5 routes and 8 shuttles connecting nearly 10 key destinations within the community.

Photo retrieved from:
https://ridebeep.com/location/move-nona/

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 2

Goal Q.1 Meet the critical needs of Satellite Beach Residents

Sustainability Action Q.1.6 Explore new approaches for increasing housing density with little or no change to the character of the neighborhoods.

Description:
The character of Satellite Beach is very important to the residents. There may be methods to increase housing density in Satellite Beach neighborhoods, thereby increasing housing affordability, without altering the character. Methods may include allowing duplexes, mother-in-law suites, and more.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Ongoing

Sustainability Action Q.1.7 Work with Space Coast Area Transit to preserve current special needs transportation available to City residents and to increase public transportation options between the City and regionally.

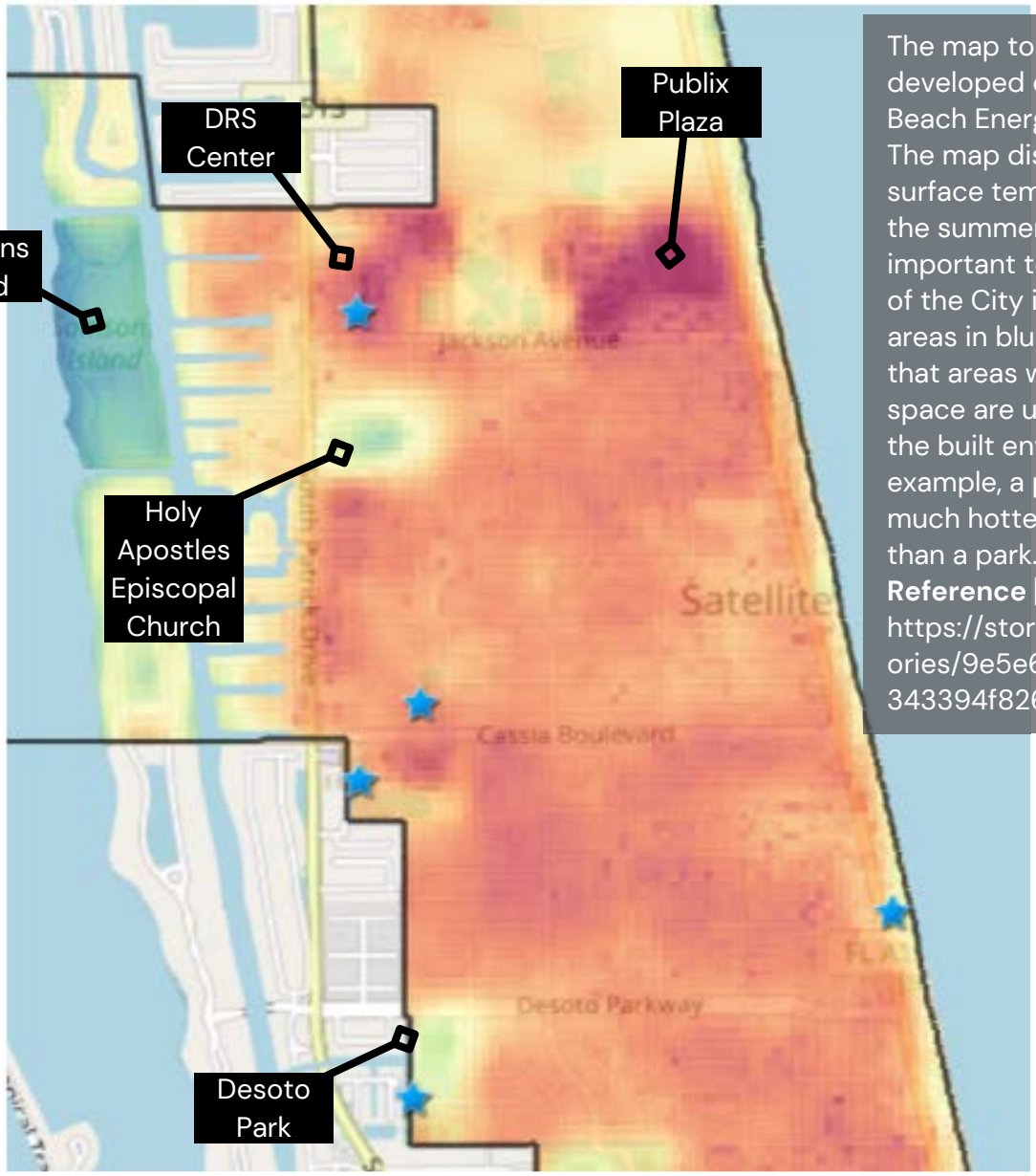
Previous Progress:
The City of Satellite Beach has teamed with Space Coast Area Transit (SCAT) to provide volunteer-driven vans for those in need to get to grocery stores and doctors appointments. Volunteers in Motion provides transportation for individuals who are unable to use SCAT buses and trollies and regular Paratransit service on their own. As far as public transportation, the only public transportation in Satellite Beach is via the bus system, Space Coast Area Transit (SCAT, also known as 321 Transit). The SCAT bus system runs from 7:30AM to 7:20PM on weekdays and 8:30AM to 6:25PM on Saturdays. It does not run on Sundays.
Description:
The City will prioritize preserving the Volunteers in Motion program within Satellite Beach. The City will also continue to research ways to increase public transportation options between the City and regionally so that all residents of Satellite Beach, regardless of whether they own a vehicle, will have access to necessary facilities. Options may include increased bus frequency or expanding to other methods of transportation.

Status	Responsible Department	Cost	Timeframe
In Progress	Fire / Planning & Sustainability	Free	Ongoing

Goal Q.2

Invest in green spaces to reduce heat island effect, encourage outdoor activity, and beautify Satellite Beach

Indicators



The map to the left was developed during the Satellite Beach Energy Project (2020). The map displays median land surface temperature (LST) from the summers of 2015-2019. It is important to notice hot spots of the City in red, and cooler areas in blue. It should be noted that areas with more green space are usually cooler than the built environment. For example, a parking lot would be much hotter on an LST map than a park.

Reference [47]: https://storymaps.arcgis.com/stories/9e5e698888e54d7897178343394f8269

5.4%

of municipal property dedicated to recreation

Other metrics to be collected in 2023- 2026:

- Values for the average land surface temp.
- Number of trees on public property
- Number of trees on private property

Goal Q.2 Invest in green spaces to reduce heat island effect, encourage outdoor activity, and beautify Satellite Beach

Sustainability Action Q.2.1 Map trees on all properties within the City with ArcGIS.

Description:
Urban trees are a critical asset to cities. Trees sequester carbon, reduce energy usage, remove air pollutants, filter and absorb stormwater, and cool hot city streets by providing shade and releasing water vapor. There are also mental and physical benefits of trees for residents. A growing body of evidence links exposure to vegetation with reduced rates of mortality, cardiovascular disease, stress, and depression. Living in greener areas is associated with higher levels of happiness, cognitive development, and learning outcomes. These benefits are related to a decrease in exposure to air pollution, noise, and heat, increased contact with nature, and strengthened social cohesion. One way to quantify the benefits of existing trees is to map trees within the City. Once City property trees are mapped, gaps can be identified for good tree-planting locations. While trees are extremely beneficial, they also can cause damage to critical infrastructure such as underground stormwater pipes, roads, foundations, and powerlines. Because of this, it is essential to plant the right tree in the right place.

Case Study [48]:
San Francisco created an Urban Forest Map – a visualization of every tree in the city. This involved teaming up with a local non-profit and tree inventory specialists ArborPro and Davey. Within 1 year, a team of certified arborists identified exact location, species, and current conditions of almost 125,000 trees and identified 40,000 vacant sites for future plantings. The map shows that San Francisco's trees provide significant value to the city. The city's arboreal infrastructure saves more than $2.3 million per year, conserves more than 12 million kWh/year of energy, filters more than 100 million gallons of water, improves air quality by 55,000 lbs/year, removes 19 million lbs/year of carbon dioxide and stores 77 million lbs of carbon dioxide.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	<$10,000	Year 1-2


Birds eye view of tree plantings and layout of Gail Meredith Seaside Forest project at City Hall

Goal Q.2 Invest in green spaces to reduce heat island effect, encourage outdoor activity, and beautify Satellite Beach

Sustainability Action Q.2.2 Plant 30 trees per year.

Previous Progress:
In 2021, the City of Satellite Beach established the T.R.E.E.S. program as part of the 2021 Earth Day Celebration. This program involved partnering with multiple Brevard County cities to plant 1,000 trees as part of an "Urban Tree Planting Collaborative." Although the program was a great starting point, it needs to be reevaluated to ensure adequate metrics are being collected and published.


Photo of volunteers at the Gail Meredith Seaside Forest project ground-breaking

Description:
City staff and volunteers will plant 30 trees per year either on City property or on residential property through the T.R.E.E.S. program and other events, including planting fruit trees at the community garden. This will involve planting a minimum of 5 community fruit or nut trees in the first year, and at least 2 community fruit or nut trees per subsequent year, with the goal of planting 10 fruit or nut trees by 2027. The T.R.E.E.S. program will be revamped with the goal of publishing metrics on the City's website every year including amount and type of trees planted each year. Other metrics to be collected will include coordinates of where plantings occurred.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	<$1,500/year	Annually

Goal Q.2 Invest in green spaces to reduce heat island effect, encourage outdoor activity, and beautify Satellite Beach

Sustainability Action Q.2.3 Investigate various roofing materials, identify the best to reduce heat buildup, and use those materials when repairing or replacing municipal building roofs.

Description:
The following cities offer **rebates** specifically for reflective or vegetated roofs: New York City, Phoenix, Sacramento, Toronto, and Washington, D.C. and the following cities have **city codes or ordinances** requiring reflective roofing: all of California, Austin, Boston, Chicago, Dallas, New York City, Philadelphia, Portland, Vancouver, Washington, D.C. (reference). Using these as a reference, the City will establish an internal procurement policy requiring municipal buildings to only source materials that will have the least impact on the Heat Island Effect.

Status	Responsible Department	Cost	Timeframe
In Progress	Public Works/ Planning & Sustainability	Free (expected cost savings)	Annually

Sustainability Action Q.2.4 Require the use of Cool Pavement techniques for all new sidewalks and parking lots.

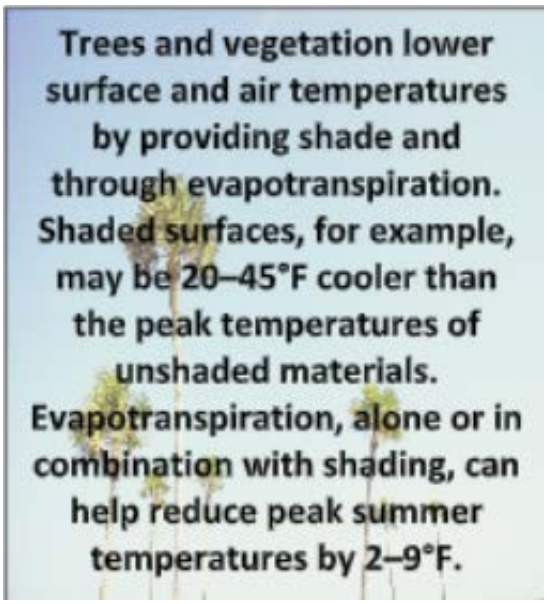
Description:
Cool Pavement techniques include reflective pavements, non-vegetated permeable pavements, and vegetated permeable pavements. The EPA's *Reducing Urban Heat Islands: Compendium of Strategies* (October 2008) [49] describes the causes and impacts of summertime urban heat islands and promotes strategies for lowering temperatures in U.S. communities. Chapter 5 is dedicated to "Cool Pavements." The City will require the use of Cool Pavement techniques for all new sidewalks and parking lots in Satellite Beach through the City's Land Development Regulations. This may involve requiring pavements to meet a solar reflectance threshold (California's solar reflectance threshold is 0.63 for low-sloped roofs, Dallas = 0.65, Chicago = 0.50, Houston = 0.70, NYC SRI = 0.78) or include a certain percentage of shaded area [50].

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 1

Goal Q.2 Invest in green spaces to reduce heat island effect, encourage outdoor activity, and beautify Satellite Beach

Sustainability Action Q.2.5 Incorporate shade elements into the Jackson Ave Streetscape.

Description:
The design of the Jackson Ave Streetscape Project will include widening pedestrian paths, installing bicycle shared lane markings, also known as "sharrows," replacing curbs, and adding beautification improvements to Jackson Ave. It has been listed as a priority project on the Space Coast Transportation Planning Organization (SCTPO)'s Bicycle & Pedestrian Master Plan [51]. In addition to aesthetic and safety improvements, the City will work to incorporate shade elements, where feasible on the project. Aspects to consider are overhead power lines and underground utilities.



Status	Responsible Department	Cost	Timeframe
In Progress	Public Works/ Planning & Sustainability	Unknown	Year 1-2

Sustainability Action Q.2.6 Incorporate grass areas for overflow parking in all new municipal development.

Description: In a typical commercial development, parking accounts for over 50% of the footprint [52]. Minimum parking requirements often create an oversupply of parking. On municipal properties where overflow parking is anticipated, the City will investigate the feasibility of using grass areas, with some sort of geocell to protect the integrity, instead of concrete pavement.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works	Expected Cost Savings	Ongoing

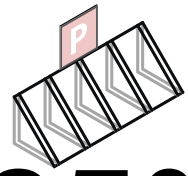
Goal Q.3

Create a more Walkable / Bikeable Community

Indicators

Photo of bike racks at Pelican Beach

Photo Credit: Satellite Beach Fire Department



35%

municipal properties with bike racks

12

miles of sidewalks

Other metrics to be collected in 2023-2026:

- Number of benches on City rights-of-way for pedestrian use
- Number of bike racks at beaches
- Percentage of total streets with sidewalks on both sides
- Percentage of total streets with bike routes
- Miles of trails including Desoto pathway and Samsons Island

Goal Q.3 Create a more Walkable / Bikeable Community

Sustainability Action Q.3.1 Audit and revise Comprehensive Plan Transportation Element to adequately reflect the connectivity needs of the City.

Description:
The City's Comprehensive Plan contains a Transportation Element which contains one goal, 7 objectives, and 29 policies about transportation in Satellite Beach. Staff, Sustainability Board Members, or a third party shall review the Transportation Element to determine necessary updates and to ensure that it adequately reflects the connectivity needs of the City. This shall occur by 2027.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 2

Sustainability Action Q.3.2 Perform a "Complete Streets" evaluation.

Description:
"Complete Streets" are streets that accommodate all types of users, safely and equitably. A "Complete Streets" evaluation will determine (1) length, width, and condition of sidewalks and bicycle rights of way; (2) baseline numbers of walkers / bikers; and (3) tree canopy / shade on each corridor. City staff will hire a third party or will use the Complete Streets Evaluation Toolkit [53]. Once an evaluation is complete, the City will consider implementing a Complete Streets Policy using Smart Growth America's Elements of a Complete Streets Policy [54].

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free (Staff Time)	Year 2

Goal Q.3 Create a more Walkable / Bikeable Community

Sustainability Action Q.3.3 Increase length of ADA-compliant sidewalks on City streets.

Description:
Install sidewalks meeting ADA standards on City streets such that at least 95% of the City's residences have a complete sidewalk connection to all schools, City facilities, and retail commercial establishments, including both sides of A1A and South Patrick Dr, using Cool Pavement techniques as mentioned above.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works	Unknown	Ongoing

Sustainability Action Q.3.4 Continue to work with Space Coast Transportation Planning Organization (SCTPO) to ensure City projects are prioritized.

Previous Progress:
The City of Satellite Beach has conducted a study and is in the process of developing plans to enhance bicycle and pedestrian access through a Complete Streets project. The design of the Jackson Ave Streetscape Project will include widening pedestrian paths, installing bicycle shared lane markings, also known as "sharrows," replacing curbs, and adding beautification improvements to Jackson Ave. The City acquired all the right-of-way to construct the improvements without the need to acquire any easements. The project is to promote safe and efficient bicycle and pedestrian travel for residents of Satellite Beach, especially for school children as Jackson Ave borders three public schools. It was originally not included as a priority project on the (SCTPO's Bicycle & Pedestrian Master Plan [51]. However, after the City adopted the Vision Zero Campaign and conducting a safety study, the City wrote to the SCTPO requesting that it be included.

Description:
The City attends bi-monthly Space Coast TPO Technical Advisory Committee meetings and will continue to use this opportunity to ensure City projects are prioritized on the Space Coast TPO Bicycle & Pedestrian Master Plan.

Status	Responsible Department	Cost	Timeframe
In Progress	Planning & Sustainability	Free	Ongoing

Goal Q.3 Create a more Walkable / Bikeable Community

Sustainability Action Q.3.5 Expand the number of bike racks and repair stations at public properties.

Previous Progress:
In 2022, the City performed a survey of municipal properties (excluding beach properties) with bike parking infrastructure. It was determined that of the 16 properties surveyed, only 5 had bike racks, with a total of 75 bike spots.

Description:
By the end of 2023, the City will ensure there are bike racks at every municipal property. Further, staff will investigate the advisability and feasibility of having bike pumps and repair stations available at key City facilities or along bike paths. Staff will need to ensure adequate safety measures are in place to ensure theft is unlikely.

Reference:
Bike repair stations may cost between $750 and $2,000 per station. They are being supplied by many municipalities across Florida including Miami Beach, Safety Harbor, Lakeland, University of Florida, Orlando, Sunrise, Tampa, Weston, Bradenton, Ft. Lauderdale, & Largo.

Status	Responsible Department	Cost	Timeframe
In Progress	Public Works / Recreation	Free - $600 per rack	Ongoing

Sustainability Action Q.3.6 Incorporate biking infrastructure into all road development projects.

Description:
As road development projects occur within Satellite Beach, City Staff will ensure biking infrastructure is being incorporated in the design phase. This will range from sidewalks to bike lanes to “sharrows.”

Photo retrieved from:
https://www.ci.durham.nh.us/administration/what-are-those-markings-street-sharrows

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Public Works	Unknown	Ongoing

Goal Q.4

Create pathways to a more localized food system

Indicators

1

Farmer market serving the City

3

Number of grocery stores within 3 miles of city center

19

Community garden plots available

Photo of farmer's market, Credit: Recreation Department


Photo of new Community Garden layout, Credit: Thea Baker

Other metrics to be collected in 2023-2026:

- Acreage of food-producing land
- Number of food hubs within City limits
- Percentage of residents within 1/2 mile of a grocery store, fruit and vegetable market, meat market, seafood market, food hub, or farmer's market

Goal Q.4 Create pathways to a more localized food system

Sustainability Action Q.4.1 Perform an economic assessment of a local food system.

Description:
Using the Toolkit to Guide Community Discussions, Assessments and Choices [55], establish a team of local (within Satellite Beach) and external (local to Brevard County) stakeholders to evaluate the economic impacts of local food system initiatives. The purpose of the evaluation will be to raise widespread awareness about the benefits of a localized food system, facilitate relationships between related local businesses, and to provide supportive data for public and private investment into local food initiatives. The team should include at a minimum City Staff, growers / farmers, and food distributors (grocers and/or restaurant owners). Team may also include neighboring municipalities, county staff, council members, interested residents, research students, school staff, and any other relevant stakeholders. The first step will be to conduct an asset mapping exercise of pre-existing community assets.

Case Study:
In the case of the multi-county Northern Colorado Food System Assessment, the leadership team drew upon the expertise of both individual, county-based advisory groups, and an overarching steering committee (drawn from leaders of the counties' advisory groups). Each county group met with the assessment team monthly to give feedback on different elements of the project; feedback was compiled, and then the leadership team (with representatives from each county) decided on refinements or next steps that considered each advisory group's interests and concerns. This governing structure allowed for better coordination across the regional effort, and enabled the leadership to get more focused feedback and integration of each county discussion.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Free	Year 3

Goal Q.4 Create pathways to a more localized food system

Sustainability Action Q.4.2 Investigate a public/ private partnership to establish a combined gopher tortoise habitat site with a food forest /community orchard on City property.

Description:
In order to establish a long-term viable food forest on City property, it will be essential to form a public/private partnership with a non-profit or for-profit entity to perform long term maintenance. A public food forest would provide local food for the community, provide a food source for native and endangered species, help preserve and enhance the soil, and act as a demonstration site for what types of produce can be grown within City boundaries. Food sources would be chosen so as to require little maintenance, attract little pests, and to act as a food source for both humans and gopher tortoises. The photo below is from Satellite Beach's Banana River Yard, a demonstration Food Forest.

Case Study [56]:
Due to a US Forest Service grant and a partnership between the City of Atlanta, the Conservation Fund, and Trees Atlanta, the largest free food forest in the U.S. has been established. It is located on 7.1 acres of a once-dormant pecan farm, 10 minutes from the Atlanta Airport, in a food desert. The forest is part of the city of Atlanta's larger mission to bring healthy food within half a mile of 85% of Atlanta's 500,000 residents by 2022. The forest is now owned by the parks department and more than 1,000 volunteers and neighbors are helping to plant, water and maintain the forest. In a day alone, there can be more than 50 volunteers working on the forest.

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability	Unknown	Year 4

Sustainability Action Q.4.3 Create a fruit-share program.

Description:
Create a fruit-share program that pairs homeowners with fruit trees with volunteers who will harvest excess fruit and distribute to an underserved community or partner with a local entity to do this.

Case Study [57]:
Salt Lake City's Green Urban Lunch Box harvested 33,457 pounds of fruit from over 3,000 trees in 1 year, pictured right.

Photo Retrieved from:
https://www.facebook.com/thegreenurbanlunchbox/photos

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Recreation/ Planning & Sustainability	Free (Staff Time)	Year 3

Sustainability Action Q.4.4 Increase public access to locally grown and harvested food.

Description:
Increase public access to locally grown and harvested food by ensuring there are at least two local produce farms represented at the weekly farmer's market and pursue partnerships with neighboring communities to establish a rotating farmer's market on an additional day. Currently, the farmer's market only occurs on Thursday. This rotating market could be hosted by Satellite Beach one day of the month, and neighboring cities on the other weeks. This would allow residents who work during the Thursday farmers market hours to have access to the market. These markets would also be more catered to produce and food vendors than to artisan vendors.

Status	Responsible Department	Cost	Timeframe
In Progress	Recreation	Free	Year 2

Goal Q.4 Create pathways to a more localized food system

Sustainability Action Q.4.5 Work with schools to facilitate a farm-to-school program.

Description:
Farm-to-school programs can enrich the connection communities have with fresh, healthy food and local food producers by changing food purchasing and education practices at schools and early care and education settings. Students gain access to healthy, local foods as well as education opportunities such as school gardens, cooking lessons and farm field trips. Farm to school empowers children and their families to make informed food choices while strengthening the local economy and contributing to vibrant communities. Farm to school implementation differs by location but typically includes procurement practices (Local foods are purchased, promoted and served in the cafeteria or as a snack or taste-test), school gardens, and/or education. Bringing a Farm to School Program to Satellite Beach schools may involve work directly from the schools, students and teachers, or advocating to Brevard Public School Board from the students via the Satellite Beach Youth Council.

Case Study [58]:
The Sarasota County Farm-to-School Program began in 2005 as part of the National Farm to School Program. In the 2010-11 school year, approximately 50% of the produce was purchased from 9 farms within a 100-mile radius multi-county region and 100% of the dairy from 1 dairy farm in Hillsborough County. A total economic analysis of the Farm-to-School Program was conducted. In the 2010-11 school year, the direct effects of the purchases from these farms were $107,000 for produce and $1,079,450 for dairy foods which supported 22 jobs. The indirect effects totaled $2,306,745, as well as 9 additional jobs.

Photo of Sarasota Farm-to-School Program, Retrieved from: https://www.heraldtribune.com/story/news/local/sarasota/2019/07/10/sarasota-farm-to-school-program-revolutionary/4729238007/

Status	Responsible Department	Cost	Timeframe
Not Yet Started	Planning & Sustainability / Youth Council	Free	Year 3

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