City of Safety Harbor
Sustainability and Resiliency Plan

2023

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Acronyms

ADA- Americans with Disabilities Act

CIP- Capital Improvement Project/Plan

EV- Electric Vehicle

GHG- Greenhouse Gases

HVAC- Heating Ventilation and Air Conditioning

IPM- Integrated Pest Management

ISI- Institute for Sustainable Infrastructure

IVM- Integrated Vegetation Management

KPI- Key Performance Indicator

kW- Kilowatt

kWh- Kilowatt Hours

LED- Light-Emitting Diode

LEED- Leadership in Energy and Environmental Design

LIDs- Low Impact Developments

LOS- Level of Service

MCL- Maximum Contaminant Level

MGD- Millions of Gallons per Day

MSW- Municipal Solid Waste

$MTCO_2e$- Metric Tons of Carbon Dioxide Equivalent

NOAA- National Oceanic and Atmospheric Administration

PSTA- Pinellas Suncoast Transit Authority

SEER- Seasonal Energy Efficiency Ratio

SWFWMD- Southwest Florida Water Management District

TBRPC- Tampa Bay Regional Planning Council

UF|IFAS- University of Florida Institute of Food and Agricultural Sciences

WSUD- Water Sensitive Urban Design

WTE- Waste to Energy

Definitions

Alternative Fuel Vehicle (AFV): A vehicle designed to operate on an alternative fuel other than traditional gasoline or diesel including, but not limited to, electricity, compressed natural gas, hydrogen, and biodiesel.

Biodegradable: Capable of being decomposed by bacteria or other living organisms

Community Rating System (CRS): a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the National Flood Insurance Program (NFIP). In CRS communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts that address the three goals of the program: Reduce and avoid flood damage to insurable property, Strengthen and support the insurance aspects of the National Flood Insurance Program, Foster comprehensive floodplain management.

Greenhouse Gasses (GHG): a gas that contributes to the greenhouse effect by absorbing infrared radiation such as Carbon Dioxide, Methane, Chlorofluorocarbons, and Nitrous Oxide

Green Space: An area of grass, trees, or other vegetation set apart for recreational or aesthetic purposes in an otherwise urban environment.

Grey Infrastructure: The traditional stormwater infrastructure in the built environment such as gutters, drains, pipes, and retention basins.

Infrastructure: The basic physical and organizational structures and facilities needed for the operation of a society or enterprise

Low Impact Development (LID): systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater to protect water quality and associated aquatic habitat.

Potable Water: Water that meets the standards for drinking purposes of the State or local authority having jurisdiction, or water that meets the quality standards prescribed by the U.S. Environmental Protection Agency's National Primary Drinking Water Regulations (40 CFR part 141).

Sustainability: Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.)

Urban Resilience: The capacity of a city's systems, businesses, institutions, communities, and individuals to survive, adapt, and thrive, no matter what chronic stresses and acute shocks they experience.

WaterSense Label: Certification to products that use at least 20% less water, save energy, and perform as well as or better than regular models.

Water Sensitive Urban Design (WSUD): an approach to planning and designing urban areas to make use of this valuable resource and reduce the harm it causes to our rivers and creeks.

Executive Summary

The City of Safety Harbor has experienced adverse weather events, extreme high tides, droughts, and flooding events that have affected portions of the coastal city boundaries as well as those areas that surround the major creeks and outfalls. As the NOAA Office for Coastal Management and other scientific resources continue to provide information regarding sea level rise. The City must continue to prepare for increased impacts to the City, City assets, residents, and businesses as risks increase in the future. The Sustainability and Resiliency Plan will set guidelines and actionable goals to mitigate vulnerabilities, reduce impacts, and prepare for future environmental conditions.

Resolutions 2019-08 and 2020-18 passed by the City Commission initiate a transition to 100 percent renewable, zero emission energy sources while ensuring inclusion of the City's most vulnerable residents in the decision-making process. The resolutions state that the City will prepare an action plan.

Prior to the creation of the Sustainability and Resiliency Plan, the City had made progress toward the Ready for 100 Pledge and other Resiliency Initiatives:

- Duke Energy Clean Energy Connection Program
- LED Lighting Retrofits in City Facilities
- LED Lighting Retrofits for Street Lighting
- Completed Sustainability/Resiliency Public Survey
- Purchased First City Hybrid Vehicle (2021) and continue to evaluate additional EV or Hybrid vehicles.
- EV charging station at the Library
- Planned solar array at the Library.
- Wastewater/Stormwater Pipe Lining to reduce stormwater inflow/infiltration (reducing unnecessary treatment of stormwater at the wastewater treatment plant and hardening infrastructure)
- Water main replacements to reduce main and service line breaks, reducing water loss.
- HVAC system replacements – higher SEER value for better efficiency
- Emergency Operations Planning – response and recovery from disaster
- Adoption of the Pinellas County Local Mitigation Strategy
- National Flood Insurance Program Community Rating System participant, Class 7
- Flood Plain Coordinator on-staff
- Peril of Flood Act adopted and included in the City's Comprehensive Plan
- Integrated Vegetation Management and Sustainable Parks IVM Maintenance Practices
- Greenhouse Gas Emission Inventory completed, partnering with TBRPC on Greenhouse Gas Reduction Action Plan
- Watershed Master Plan and Vulnerability Assessment in progress
- Sustainable programming available to the public; Tree Talks, Garden Workshops/Clubs, Adopt-A-Street, Storm Drain Mural Program

The Sustainability and Resiliency Plan will continue to build off the projects and programs that have already been implemented to ensure we meet future needs and have the strategies to mitigate impacts to the City brought on by climate hazards.

Introduction

The City of Safety Harbor Sustainability and Resiliency Plan will address three (3) major focus areas:

- **Natural Resources**
  - Water/Wastewater
  - Sanitation/Recycling
  - Green Space
- **Infrastructure and Services**
  - Energy Efficiency
  - Sustainable Buildings
  - Transportation
- **Resiliency**
  - Sustainable Stormwater Management
  - Flood Mitigation
  - Infrastructure Hardening

As each of the focus areas are discussed, key performance indicators (KPIs) will be assigned in order to set baseline measurements and goals to track progress. These KPIs could include gallons of water saved, kWhs saved, GHG reductions, solid waste diverted, increase in recycling tonnages, etc.

Other areas of interest will be to obtain certifications available for City facilities and infrastructure. LEED (Leadership in Energy and Environmental Design) is the world's most widely used green building rating system. LEED certification provides a framework for healthy, highly efficient, and cost-saving green buildings, which offer environmental, social and governance benefits. The Institute for Sustainable Infrastructure (ISI) is an organization that developed and manages Envision, a framework that encourages systemic changes in the planning, design, and delivery of sustainable, resilient, and equitable civil infrastructure through education, training, and third-party project verification. Envision project verification demonstrates that a project meets environmental, social, and economic standards.

Following the discussion of the major focus areas, the appendices provide for specific action item goals and resources.

Focus Area: Natural Resources

Water/Wastewater

The City of Safety Harbor owns and maintains the City's water and wastewater distribution system. The City purchases our water through Pinellas County (from the S.K. Keller Water Treatment Facility) and transports our wastewater to the City of Clearwater's Northeast Advanced Wastewater Treatment Facility (where we have contractual capacity at the plant). The Water Division maintains approximately 6,672 water meters, 571 fire hydrants and approximately 89 miles of water mains. The City's wastewater collection system is comprised of approximately 74 miles of piping including gravity, force main piping, and 25 pump stations.

The City facilitates a robust capital improvement program to replace aging infrastructure in order to maintain water quality, prevent water loss, prevent sewer back-ups, maintain wastewater flow, and prevent stormwater inflow and infiltration into the City's wastewater systems.

The City currently averages around 1MGD (million gallons per day) for potable water supply and 1.2MGD of wastewater treatment. The City has a maximum of 2.5 MGD by contract for water supply and 4 MGD for wastewater treatment.

The following are recommended actions that can assist in the goal to reduce water use and reduce inflow and infiltration into the sanitary sewer system.

- Conserve Water
  - Use Faucet aerators, toilets, and showerheads that earned the WaterSense Label from the EPA.
  - Follow City water restrictions as per City Code of Ordinances Sec. 24.40, watering twice per week only.
  - Hand water vs. irrigation.
  - Use soil sensors and rain sensors with irrigation.
  - Increase mowing height to reduce stress on lawns; the lower the cut the less drought resistant.
  - Do not use fertilizer during dry conditions – it increases a lawn's need for water.
  - Use mulch to keep moisture near roots of plants.
  - Plant Florida Friendly, drought tolerant plants (Land Development Code Sec. 154.00).
  - Rainwater capture through rain cisterns and barrels for non-potable use.
  - Sustainable stormwater management that captures and uses stormwater before going down the pipe. (WSUD)
- Prevent Inflow and Infiltration into the Sanitary Sewer System
  - Check all clean-out caps, keep them closed to prevent the inflow of any stormwater into the sanitary sewer system.
  - Replace any broken sanitary sewer laterals to prevent infiltration into the sanitary sewer system.
  - Do not direct connect roof drains or pool drains into the sanitary sewer system (Code of Ordinances Section 24.06)

Success can be measured monthly through meter readings.

Focus Area: Natural Resources
Sanitation/Recycling

The City of Safety Harbor provides all residents and businesses with access to sanitation services that include single stream recycling. It is important to reduce our waste generation to protect our natural resources and our environment. The lone landfill in Pinellas County is expected to reach capacity within the next 75 years, and that timeline will accelerate as the population of the county grows and the Waste-to-Energy (WTE) facility reaches processing capacity within the next 3 years (Figure 1) at the current daily tonnage burn rate. Currently, it is estimated that up to 70% of what is thrown in the trash could be recycled. The recycling rate for Pinellas County was 67% on a state mandated goal of 75% (F.S. 366.91). The Waste Management Hierarchy (Figure 2) dictates that the best way reduce waste is at the source and begin by reducing waste generation. Waste reduction and reusing items is followed by recycling, energy generation through incineration (WTE), and finally landfilling as the lest preferable result. By reducing waste that enters landfills and our environment, we also help reduce microplastics that are becoming an increasing pollutant in our aquatic environments.

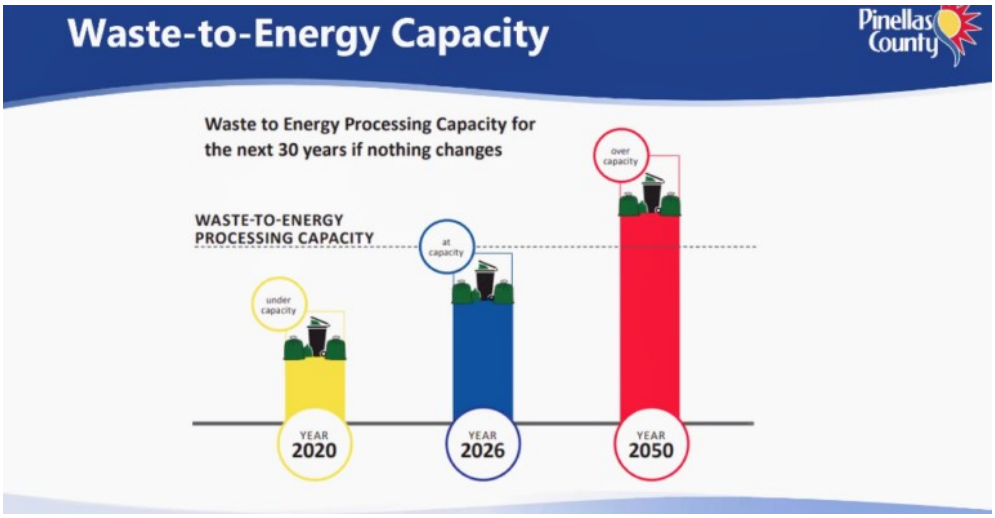

Figure 1: Pinellas County WTE Processing Capacity

There are many ways that we can reduce our waste and increase our recycling percentage. These action items are applicable to our City operations as well as residents.

These action items include:

- Encourage reusable items over disposable items.
- Ensure all City residents and City businesses have access to recycling services, recycling bins, and resources to recycle more effectively. Work with business partners and encourage training on waste reduction.
- Set up a textile recycling partnership with a 3rd party vendor to reduce waste and help those in need and reduce textiles from being disposed in the trash.
- Encourage composting for the City and residents that can be used on urban farms.
- Encourage events within the City to be low waste events by using reusable cups and biodegradable silverware.
- Purchasing environmentally friendly products that are sourced from sustainable forests and sources.
- Encourage staff to utilize double-sided printing.
- Online billing instead of paper bills in mail.
- Encourage reusable metal or plastic bottles instead of single use bottles.
- Encourage reusable bags instead of plastic bags.
- Encourage glass and plastic containers instead of disposable containers and bags.
- Encourage cloth napkins instead of paper napkins and paper towels.
- Encourage residents to remove their address from junk mail registries.
- Participate in recycling contamination studies to ensure City recycling stays clean.

Success at reducing waste and increasing recycling will be measured by the weight the City Sanitation Division collects curbside and at the drop off locations.

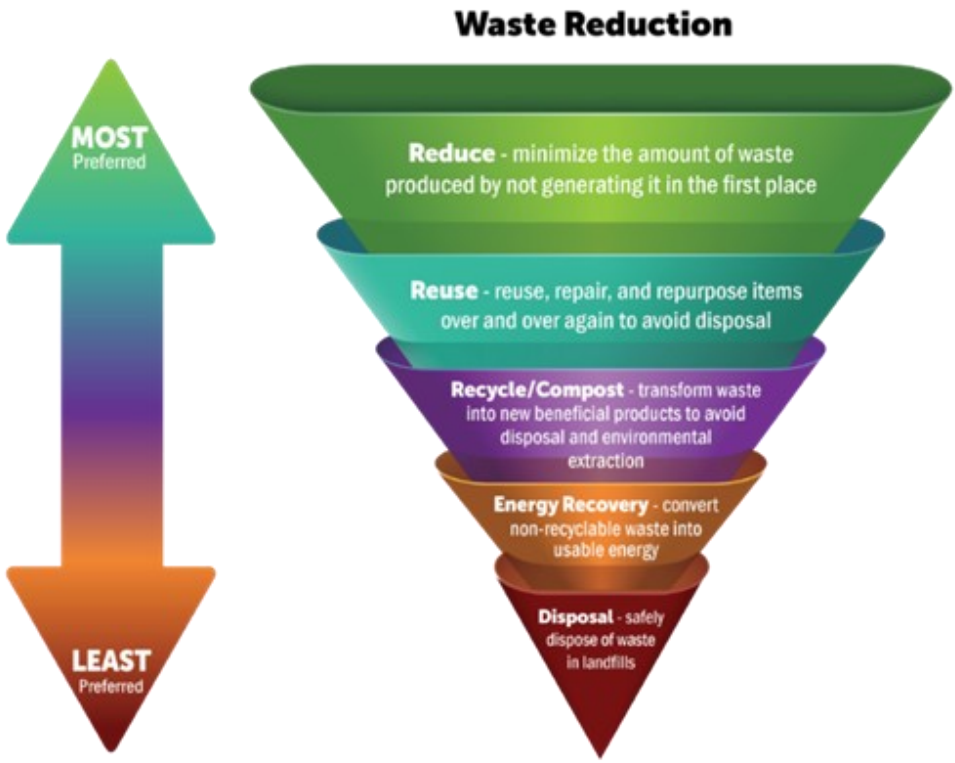

Figure 2: Waste Hierarchy source: Hillsborough County

Focus Area: Natural Resources

Green Space

Green Spaces, parks, and recreation facilities are an integral part of building a sustainable City. These Green Spaces and facilities provide residents and visitors with areas to gather for activities, exercise, and enjoy nature. Green Spaces are also an important part of our stormwater management plan by filtering, attenuating, and reducing the burden on our stormwater system by reducing the amount that enters the stormwater system. Green Spaces are also important for our local and regional freshwater supply as these spaces allow precipitation to follow the natural hydrologic cycle and recharge our groundwater sources. In addition to benefits to public health and stormwater management, Green Spaces also help keep our community cooler, reducing the intensity of the heat island effect, and improve our air quality by absorbing and filtering particulate matter in the air.

The City currently boasts over 130 acres of Green Spaces and Recreation Facilities that are available to residents and visitors. The City is currently working on expanding the Green Spaces within the city to include more urban agriculture and a food forest that will be available for public use.

The following are recommended action items to expand and protect our Green Spaces:

- Green Spaces
  - Assess feasibility of acquiring land for public use.
  - Promote use of Green Spaces through events and education of health benefits.
  - Maintain the health of our Green Spaces through Integrated Vegetation and Pest Management practices.
  - Expansion of our tree canopy throughout the City; enhancing the urban forest.
  - Maintain Florida Friendly Landscaping policies congruent with Land Development Code Sec. 154.00.
  - Implement urban agriculture opportunities.

Success will be measured on the public satisfaction, local waterway health, and health of our tree canopy.

Figure 3: Washington County Benefits of Parks, Trails, and Open Spaces

Focus Area: Infrastructure and Services
Energy Efficiency

We rely on the built environment for all aspects of our daily lives. Buildings consume 76% of all electric demand in the US, resulting in 30% of all GHG emissions associated with end-user electricity use. Following LEED and ISI principles and efficiency goals, Safety Harbor will be able to build a more sustainable built environment that uses resources more efficiently. Reducing our electricity use also helps reduce our GHG emissions that are associated with global warming that is causing increased temperatures and rising sea levels. Green Energy production, whether on site or through renewable sources on the grid, are the best way to decrease our GHG emissions. Safety Harbor has the goal of creating a more sustainable built environment through reductions in energy consumption, carbon emissions, waste production, and conservation of water. The Safety Harbor GHG Inventory of 2019 revealed that the City used 5.6 million kWh (kilowatt hour) of energy for operations, resulting in 2,584.2 $MTCO_{2e}$ (Metric Tons of Carbon Dioxide Equivalent).

There are a multitude of ways that the City and residents can improve their energy efficiency and expand clean energy sources within the City. The following actionable items are steps and initiatives that the City is taking to be more energy efficient and expand our green energy sources. Many of these action items can be implemented in homes and businesses as well.

- Energy Audit of your home and business to identify major deficits in efficiency.
- Improving Building Envelopes
  - Proper seals on doors and windows
  - Double or triple paned windows
  - Robust insulation in exterior walls and attic
- Smart Building Controls.
- Efficient LED lighting.
- Passive systems and designs (harnessing the natural environment to drive the internal environment).
- Occupancy sensors.
- Properly sized and efficient HVAC systems.
- Tankless water heater.
- Smart thermostats to efficiently control HVAC systems based on personal comforts and weather conditions.
- ENERGY STAR® appliances and electronics.
  - Washer, Dryer, Refrigerator, Freezer, HVAC, Water Heater, etc.
  - Computer (Desktop and Laptops), TVs, Monitors, etc.
- On-Site Solar generation.
- Duke Clean Energy Connection.
- Resilient buildings that mitigate impacts of potential power interruptions.
- Resources to educate public on benefits of green energy and energy efficiency.
- Tools available to the public such as a Home Energy Audit Kit and links to resources available to the public.
- Require Solar Feasibility Study for all new development within City limits.

The success of our energy infrastructure initiatives will be measured by the reduction of energy used, energy efficiency, and amount of clean energy produced and purchased from the grid.

Focus Area: Infrastructure and Services
Sustainable Buildings

Sustainable buildings are built specifically to minimize impacts to the environment by reducing energy, pollution, and water consumption while providing a healthy living or working environment. However, a sustainable building is not just sustainable during its operation, it starts its life cycle being sustainable from the early planning stages all the way through envisioning its final days readying for demolition. LEED (Leadership in Energy and Environmental Design) sets the rating for sustainable buildings. There are other notable global rating systems, but LEED is the most recognizable here in the United States. Sustainability is not just applicable to new buildings. Sustainable buildings should encompass some of the other focus areas already discussed, Energy Efficiency, Water/Wastewater, Sanitation/Recycling, and even Transportation. Existing buildings can be retrofitted to become more sustainable. Action items that the City can implement to support sustainable buildings include:

- Existing Buildings
    - Retrofitting existing HVAC systems and controls
    - Reducing water consumption
    - Improving indoor air quality through new duct work and filtering systems
    - Implement enhanced Operation and Maintenance schedules to keep equipment at peak efficiency.
    - Reduce waste.
    - Reduce electrical impacts through LED lighting, occupancy sensors, solar.
    - Complete exterior building improvements – sealing windows, doors.
    - Adding EV charging stations or alternative transportation parking (bike racks) to encourage non-fossil fuel commuting.
- New Buildings
    - Begin design of new buildings with green building concepts and practices in mind.
    - Design must efficiently use energy, water, and all other resources.
    - Finished construction must protect occupant health and improve employee productivity through efficient installations.
    - Use of the facility must reduce waste, pollution, and must prohibit environmental degradation.
- Adopt codes that encourage the use of green building concepts to reduce environmental impacts.
- Complete building assessments to begin planning for sustainable improvements.

The success of the sustainable building initiatives will be measured by building certifications, increased building efficiencies (lower utility bills), and completion of future capital improvement projects.

Figure 4: Sustainable Construction Source: Nestcon

Focus Area: Infrastructure and Services

Transportation

Transportation is also a major contributor to GHG emissions. Personal and work vehicles accounted for 81% of emissions in the transportation sector in 2021. Our 2019 GHG Inventory also calculated that our vehicle fleet emitted 803.78 $MTCO_{2e}$. Safety Harbor is committed to reducing our vehicle emissions by improving our work fleet efficiency and adding EV infrastructure within the City for visitors and residents. The City is committed to reducing our fleet emissions by adding alternative fuel vehicles to the fleet. The City recently purchased a hybrid vehicle with plans to incorporate additional alternative vehicles without sacrificing the level of service for residents.

The City committed to improving our pedestrian infrastructure to facilitate easier and sustainable movement within our City. The City published our Sidewalk and Bicycle Facility Master Plan, laying out plans to increase the walkability and bikeability of our City by increasing connections and improving safety of existing infrastructure. The City currently has 104 Curb Miles of Street, with as much as 3.5 miles of sidewalk and 25 miles of bicycle improvements planned in the Master Plan.

Action items that the City will undergo to increase our mix of alternative vehicles and support sustainable transportation include:

- Evaluating alternative fuel vehicles to integrate into the City fleet.
- Carpooling and using virtual meetings to reduce miles driven on vehicles.
- Expanding the EV infrastructure within the City by installing additional EV charging stations for public use.
- Looking at areas for buffered and protected bike lanes.
- Bike racks covered by shade trees or cover structures.
- Bike racks at City facilities and as required for new developments per the Land Development Code 147.04(I).
- Bicycle repair stations along bike paths.
- Shade trees for heavily traveled pedestrian areas.
- Shared Use Paths and Trails.
- High Visibility Crosswalks.
- Ensuring all sidewalks and ramps are ADA compliant.
- Implementing Rectangular Rapid Flashing Beacons (RRFBs) at our busiest and most dangerous intersections.
- Continue working with Pinellas County to increase PSTA access.

Success will be measured by amount of GHGs we reduce and the increased level of mobility within the City.

Focus Area: Resiliency
Sustainable Stormwater Management

Resiliency can be defined as the sustained ability of a community to use available resources to respond to, withstand, and recover from adverse situations. In the case of Safety Harbor, the common adverse situations include storm surge, flooding, and extreme heat caused by extreme weather events, such as hurricanes, and climate change. The City maintains 12.88 miles of ditches and creeks, which includes removing trash, debris and soil sediment from creeks, ditches and ponds as defined in the Stormwater Operations Guidelines (2012). The City also provides routine inspections and cleaning of over 1,075 City catch basins. Not only is there City stormwater infrastructure; the City is also comprised of a network of private stormwater infrastructure. The entirety of the ditches, ponds, and creeks are responsible for holding and removing stormwater and prevent flooding throughout the City. The City has been taking measures to increase resiliency for the future including having a Flood Plain Coordinator on-staff, participating in the National Flood Insurance Program Community Rating System, and conducting a Vulnerability Assessment and Watershed Master Plan, both of which are in progress.

Traditional stormwater management practices aim to move stormwater away from populated areas as quickly as possible. As climate change occurs, heavier rains and the built environment pose a risk of over burdening the stormwater drainage system. Stormwater is a resource that has value and there are sustainable and resilient solutions to dealing with stormwater that have ancillary benefits including City beautification, water savings, and public health benefits. The best way to handle stormwater is to capture it at the source and reduce the amount that becomes runoff as it enters the drainage system through Low Impact Development (LID) projects. These LID recommendations also help the environment by reducing pollutants that enter our local waterways and attenuates water to recharge our groundwater sources.

Water Sensitive Urban Design (WSUD) dictates that the best way to handle stormwater is to build LIDs that mimic the natural hydrologic cycle. Below is an illustration that shows how urban areas impact the hydrologic cycle and how WSUD aims to mitigate our impact.

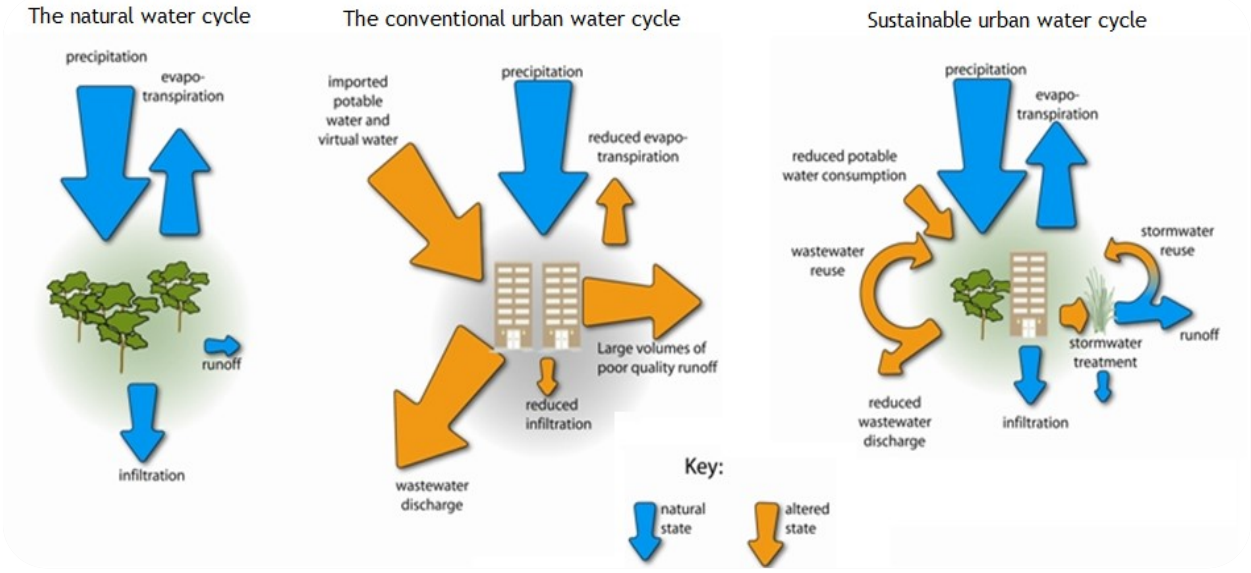

Figure 5: Water Sensitive Urban Design mimics the natural hydrologic cycle and uses stormwater as a resource. Hoban & Wong, 2006

Focus Area: Resiliency
Sustainable Stormwater Management

Actionable projects that will build resiliency into stormwater management include:

- Rainwater Harvesting
  - Reduces runoff and water can be used for non-potable purposes.
- Installing Bioswales
- Vegetative Strips
- Rain Gardens
- Pervious Pavement for parking spaces
- Green Spaces
- Constructed wetlands (artificial wetland designed as a treatment system)
- Additional Ponds
- Sustainable drainage solutions

Success will be measured by the health and quality of our surrounding aquatic ecosystem and the amount of stormwater that is diverted from infrastructure.

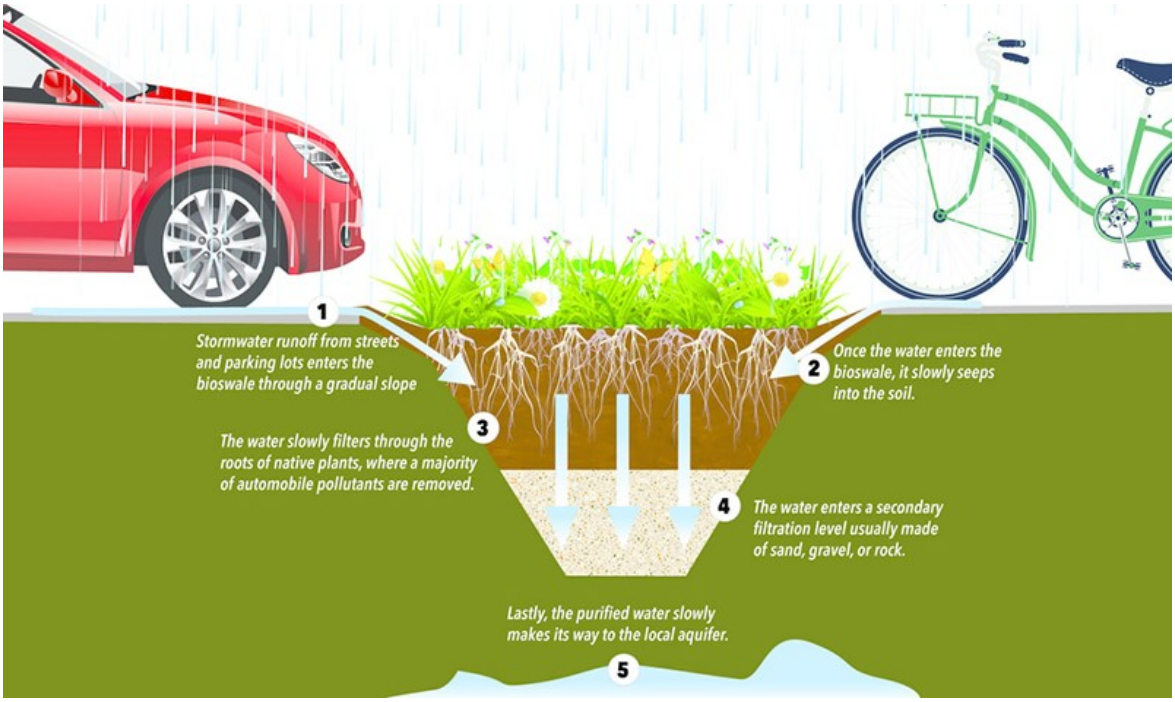

Figure 6: Bioswales: More Than Just a Ditch – Ayres Associates

Focus Area: Resiliency
Flood Mitigation

The City of Safety Harbor boasts approximately 4.5 miles of coastline, much of which is developed. As climate change occurs, hurricanes and tropical storms are expected to occur with increased frequency and intensity. Safety Harbor sits at an average elevation of roughly 20' above sea level, making many low lying and coastal areas vulnerable to storm surge from hurricanes and severe thunderstorms. Recent hurricanes, such as Idalia, show how climate change is causing storms to rapidly intensify and project their damaging winds and surge over greater distances. With sea levels expected to rise one foot by 2050 and two feet by 2100, more of the City will be vulnerable to flooding and storm surge. As we experienced with Hurricane Idalia, a natural coastline with a robust mangrove stock will help protect the City from surge. While we will not be able to entirely stop storm surge, there are measures that can be taken to mitigate the impacts of storm surge to protect life and property from the impacts. These actionable items must be a collaborative effort between the City and property owners along the coastal zone and waterways to be successful.

The following are items that can assist with flood mitigation and resiliency efforts:

- Maintain a healthy stock of mangroves and seagrass beds.
- Assist local and state agencies in assessment & monitoring of mangrove stock to identify vulnerable portions as well as seagrass beds.
- Ensure waterfront landowners know the benefits of healthy robust mangroves through educational efforts.
- Encourage salt tolerant vegetation on coastline.
- Peril of Flood Act adopted and included in the City's Comprehensive Plan.
- Watershed Master Plan and Vulnerability Assessment in progress.
    - These assessments will yield specific recommendations and action items.
- Continued participation in the Community Rating System.

Success of these action items will be measured by the effectiveness of flood prevention measures.

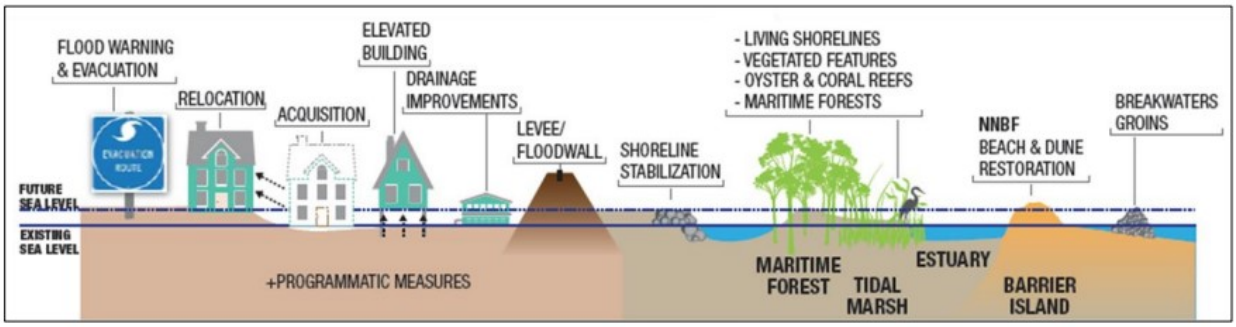

Figure 7: U.S. Army Corps of Engineers - Selected Coastal Flood Resilience and Risk Reduction Improvements

Focus Area: Resiliency
Infrastructure Hardening

Resiliency extends beyond the natural environment and includes our infrastructure and built environment as well. As stated previously, sea level rise and climate change threaten our natural environment as well as the built environment that we occupy. Wind, rain, and storm surge from stronger and more frequent hurricanes along with increased temperatures and sea level rise threaten the city we have built. Preparing our buildings and critical infrastructure now will ensure that life and property and better protected from the storms of today and the future. A combination of CIPs (capital improvement projects) and policy implementations will ensure that our community is better prepared to weather the storms and minimize interruptions in services and recovery time. Resiliency will be integrated into our built environment through:

- Elevate critical infrastructure above future critical flood levels (refer to Vulnerability Assessment once completed).
- Climate-Resilient Building Codes
  - Elevated foundations
  - Hurricane windows, shutters, roofing
- Retrofitting existing infrastructure and buildings to meet newer standards.
  - Utilization of pipe lining to reduce inflow and infiltration into underground utilities.
- Implement construction techniques that make buildings and infrastructure easier to repair.
- Comprehensive Urban Planning
  - Integrate resiliency into future infrastructure and development.
- Zoning and Land Use
  - Strict evaluation of development planning in high-risk areas.
- Multi-Agency Coordination
  - Coordination between City, County, and State teams before, during, and after storms
- Integration of renewable energy systems and on-site power generation and storage.
- Community engagement and educational materials

The success of our actions here will be measured by how well our infrastructure and City responds to extreme weather events and how quickly we are able to recover.

Figure 8: Resilient Infrastructure with Sustainability and Equity – RISE – University of Colorado Boulder

Appendix

Focus Area Goals

Topic: Infrastructure
Focus Area: Green Building Standards
Indicator: LEED Green Building Certifications
Current Situation: No City Owned or City Sponsored Buildings Certified
Goal: City Hall, Community Center, and Library LEED Silver by 2035

Background

Buildings are the leading end user of energy in the United States, consuming 76% of all electric demand, 30% of all GHG associated with end use electricity, and 14% of potable water used. LEED is the most widely used green building rating system with the goal of helping create a more sustainable built environment by reducing our energy consumption, GHG emissions, waste production, and conserve water. LEED also advocates for clean and sustainable building materials and construction techniques that protect us from toxic materials. Buildings are a vital part of our built environment, thus hold an equally important role in sustainability.

Actionable Items

I. Community and Staff Engagement

Educational Material:

- Educational articles in CityScape and tours of public LEED buildings to showcase sustainable building technologies and sustainable practices.
- Staff engagement to maintain any certification that buildings achieve.

II. Capital Improvement Projects

- City will conduct an Energy Audit of all City Facilities to achieve a baseline of energy use and energy improvement opportunities.

III. City Policies

- All new construction projects or major remodels that meet the LEED Minimum Program Requirements must achieve a minimum of LEED Silver Certification as a commitment to the long-term Sustainability of Safety Harbor.

LEED v4.1 for Operations & Maintenance: Existing Buildings
Scorecard

Y	?	N		
0	0	0	**Location and Transportation**	14
6			Prereq Transportation Performance	14
0	0	0	**Sustainable Sites**	4
			Credit Rainwater Management	1
			Credit Heat Island Reduction	1
			Credit Light Pollution Reduction	1
			Credit Site Management	1
0	0	0	**Water Efficiency**	15
6			Prereq Water Performance	15
0	0	0	**Energy and Atmosphere**	35
Y			Prereq Energy Efficiency Best Management Practices	Required
Y			Prereq Fundamental Refrigerant Management	Required
13			Prereq Energy Performance	33
			Credit Enhanced Refrigerant Management	1
			Credit Grid Harmonization	1
0	0	0	**Materials and Resources**	9
Y			Prereq Purchasing Policy	Required
Y			Prereq Facility Maintenance and Renovations Policy	Required
3			Prereq Waste Performance	8
			Credit Purchasing	1
0	0	0	**Indoor Environmental Quality**	22
Y			Prereq Minimum Indoor Air Quality	Required
Y			Prereq Environmental Tobacco Smoke Control	Required
Y			Prereq Green Cleaning Policy	Required
8			Prereq Indoor Environmental Quality Performance	20
			Credit Green Cleaning	1
			Credit Integrated Pest Management	1
0	0	0	**Innovation**	1
			Credit Innovation	1
0	0	0	**TOTALS** Possible Points:	100

Certified: 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80+ points

Figure 9: LEED Scorecard for Existing Buildings- USGBC

Topic: Infrastructure
Focus Area: GHG Emissions from Energy Sources
Indicator: GHG Emissions
Current Situation: 2,584.2 $MTCO_2e$ (2019 Emissions Inventory)
Goal: 0 GHG Emissions by 2035

Background

The City of Safety Harbor committed to powering City facilities and operations with 100% renewable, zero emission energy sources no later than 2035 with resolutions 2019-08 and 2020-18 that affirm our commitment to the Ready for 100 initiatives. The City recognizes that fossil fuels are a leading cause of anthropogenic GHG emissions that are accelerating climate change. During the 2019 City GHG Emissions Inventory, buildings accounted for 61.5% of the total GHG Emissions.

Actionable Items

I. City Operations

- Transition from fossil fuel energy sources to renewable, zero emission sources.
- Increase energy efficiency in City buildings.
- Implement smart technology to increase energy efficiency.

II. City Policies

- Conduct Solar Analysis for all new City buildings and major remodels.
- Implement energy efficient building control technology in all City buildings.

Topic: Infrastructure
Focus Area: City Buildings Energy Use
Indicator: Energy Consumption
Current Situation: 5,642,254 kWh (2019)
Goal: 15% reduction in kWh by 2030

Background

Energy consumption is measured in Kilowatt Hours (kWh). Everything we plug in uses energy and adds to our total energy consumption. The largest users of energy in our city buildings are the HVAC Systems and Lighting. Implementing smart devices in City buildings will reduce the energy used by eliminating inefficient schedules for HVAC and better control over our lighting systems. Increasing energy efficiency also increases the feasibility and reduces the strain on the energy grid.

Actionable Items

I. Community and Staff Engagement

- Educational signage and communications about what each employee can do to be more efficient when it comes to their energy use.

II. City Operations

- Assess the solar potential and feasibility of all City owned buildings.
- Continue to participate in Clean Energy partnerships with Energy Provider.

III. City Policies

- Commitment to purchasing Energy Star products when available for City buildings and operations.
- Building Energy Assessment every 5 years to continuously improve and maintain efficiency.

Topic: Infrastructure
Focus Area: City-Wide Solar Strategy
Indicator: Energy Produced by City-Owned Solar Assets
Current Situation: 0kW Capacity
Goal: 75kW Total Capacity by 2030

Background

The City of Safety Harbor committed to powering City facilities and operations with 100% renewable, zero emission energy sources no later than 2035 with resolutions 2019-08 and 2020-18. The most efficient and widely available renewable energy source in Florida is Solar. Implementing solar projects progressively on City assets will help Safety Harbor meet their commitment without significant budget strains.

Actionable Items

I. City Operations

- Install Solar + Storage systems on City buildings that meet the criteria based off the Solar Feasibility Study.
- Conversion of City-Owned Streetlights and Parking Lot lights to solar powered lights where conditions permit.

Small Scale Projects:

- Fire Station 53: Over 1,700 hours of usable sunlight annually and over 6,000 square feet of roof available. The large south facing roof makes Fire Station 53 ideal for solar production.
- Park Maintenance Building: Over 1,700 hours of usable sunlight annually and over 3,000 square feet of roof available.

Large Scale Projects:

- Public Works Complex: Over 1,800 hours of usable sunlight per year and over 30,000 square feet of roof available.
- Community Center: Over 1,700 hours of usable sunlight per year and over 20,000 square feet of roof available. Highest consumer of energy out of all City buildings. The orientation and nearly nonexistent shade cover makes this roof ideal for solar production. Savings on utility bills would fund other CIPs.

II. City Policies

- Conduct Solar Feasibility Study on City Buildings without solar periodically as market conditions change.
- All new, non-residential, construction projects conduct a Solar Feasibility Study as part of their building process and conditions of permits.

Topic: Infrastructure
Focus Area: Transportation
Indicator: EV Charging Stations/Capita
Current Situation: 1 Public Charging Port per 8,500 Residents
Goal: 1 Public Charging Port per 2,800 Residents (6 Ports)

Background

As electric vehicles (EVs) increase their share of the total personal vehicle market, the infrastructure to support them is also expanding. EV charging stations have been proven to have positive impacts on local economies by increasing foot traffic and increasing sales for local businesses. EVs also reduce the point source emissions of GHGs within the City limits that contribute to air pollution and the heat island effect.

Actionable Items

I. Community and Staff Engagement

- Educational signage and communications with facts about EVs including benefits, range, costs, and potential rebates.

II. City Operations

- Explore options for installing EV charging stations in public City owned parking areas.

III. City Policies

- Conduct study for EV charging station feasibility with all newly constructed City owned public parking areas.

Topic: Infrastructure
Focus Area: City Fleet Operations
Indicator: Hybrid and Alternative Fuel Vehicles (AFVs) in City Fleet
Current Situation: 1 Hybrid Vehicle (Non-Golf Cart)
Goal: 10 Hybrid/Alternative Fuel Vehicles by 2030

Background

The City conducted a GHG Inventory in 2019 for Government Operations. This inventory calculated that our Fleet contributed 803.78 $MTCO_2e$ to the total of 4200.81 $MTCO_2e$. Reducing our GHG emissions is a vital part of reducing our contribution to climate change. The available options and performance of Hybrid Vehicles has rapidly increased over the past 5 years. The price of Hybrid Vehicles has also come down as supply and options have increased. Hybrid Vehicles emit less GHG, have a higher average MPG, and a lower cost of ownership than their gas and diesel equivalents. Alternative Fuel Vehicles (AFVs) have also become more available with options that include fully electric vehicles, plug-in hybrids, biodiesel, and ethanol. These fuels can be made from renewable sources and have significantly lower to no GHG emissions.

Actionable Items

I. Community and Staff Engagement

- Links and educational content on the City Sustainability Webpage about Hybrid vehicles.

II. City Operations

- Explore options for purchasing Hybrids and AFV to replace current gas vehicles when the current gas vehicle is up to be replaced. If a Hybrid or AFV can be acquired that offers the equivalent or improved LOS over the gas equivalent, the Hybrid or AFV should be given priority for purchase.

III. City Policies

- Consider a Hybrid Vehicle for all vehicle at time of replacement if a hybrid or AFV option is available.

Topic: Infrastructure
Focus Area: Transportation
Indicator: Walkability and Bike Safety
Current Situation: Sidewalks on 69% of Streets and Safety Concerns for Bicyclist and Pedestrians
Goal: Increase Sidewalk Percentage and Address Safety Concerns

Background

Increasing the mobility of Safety Harbor will help decrease our local carbon emissions and aids our most disadvantaged citizens in gaining access to City services. Safe and well-maintained sidewalks and bike paths also facilitates a healthier community, with lower levels of cardiovascular issues, obesity, depression, and respiratory issues.

Actionable Items

I. Community and Staff Engagement

- CityScape Newsletter and REAL Magazine articles as well as information and links on the City Sustainability Webpage.
- Website maps of trail and pedestrian pathways.
- Completed Pedestrian and Bicycle Master Plan.

II. City Operations

- Expansion and improvement of City sidewalks and bike lanes as outlined in the Moving Safety Harbor Sidewalk and Bicycle Facility Master Plan.
- Ensure that all public transit stops in the City are connected with well-maintained sidewalks and bike lanes.
- Partner with PSTA for improved public transportation access for those who need it most.

III. City Policies

- All new developments and major redevelopments, residential and non-residential, must incorporate bike racks on site.

Topic: Natural Resources
Focus Area: Water
Indicator: Irrigated Land Area
Goal: Reduce Land Area for Irrigation

Background

Irrigation is the 2nd leading use of water in the US behind Agriculture, using approximately 9 billion gallons per day. Converting irrigated lawns and fields, that are not being used for recreation purposes, to sustainable LIDs will have many benefits including save water, increase environmental health, increase biodiversity and presence of pollinators, and save money on maintenance and treatment costs. These LIDs include rain gardens, xeriscaping, and swales.

I. Community and Staff Engagement

- CityScape Newsletter and REAL Magazine articles as well as information and links on the City Sustainability Webpage.
- Links and pamphlets from UF|IFAS on Florida Friendly Landscaping, Sustainable Landscaping, and IVM/IPM practices.

II. City Operations

- Convert unused fields and open areas to natural ground coverings and Florida Friendly Landscaping that requires little to no maintenance or irrigation.
- Use of drought resistant grasses, such as Bahia, where appropriate depending on level of use, soil, and maintenance requirements.

Topic: Natural Resources
Focus Area: Water
Indicator: Appropriate Sourcing
Current Situation: Potable Water in Use With Limited Well Source Irrigation
Goal: Reduce Potable Water Use for Irrigation

Background

Irrigation is the 2nd leading use of water in the US behind Agriculture. Irrigation that pulls from city water sources is underutilizing the value of that water. Replacing potable water with well water or rainwater saves potable water, money, and helps prevent pollution.

Actionable Items

I. Community and Staff Engagement

- CityScape Newsletter and REAL Magazine as well as information and links on the City Sustainability Webpage.
- Continue rain barrel workshops for residents to collect rainwater for irrigation and other outdoor use such as gardening and agriculture.
- Encourage homeowners to install shallow wells for irrigation and rain barrels to collect water for outdoor use.

II. City Operations

- Ensure all city properties are not using potable water for irrigation.
- Install rain cisterns at city buildings for irrigation where feasible and space allows.
- Shallow Wells to be drilled where appropriate and feasible.

III. City Policies

- Shallow wells for irrigation on new construction where environmentally possible

Topic: Natural Resources
Focus Area: Water
Indicator: Florida Friendly Landscaping
Current Situation: No Ordinance Requiring Florida Friendly Landscaping
Goal: Increase Florida Friendly Landscaping Citywide

Background

Florida Friendly Landscaping is the practice of having native plants and grasses that require fewer resources to survive in Florida. Watering the average lawn in Safety Harbor would use a minimum of 1,000 gallons per cycle. Florida Friendly plants require less water, less maintenance, are drought resistant, and are more resilient to adverse weather conditions. Florida Friendly Landscaping requires little to no watering from irrigation sources as these plants are adapted to reach the water table and be self-sufficient, even in times of extreme drought.

Actionable Items

I. Community and Staff Engagement

- CityScape Newsletter and REAL Magazine as well as information and links on the City Sustainability Webpage.
- Publications with lists of Florida Friendly plants and landscaping best practices for water conservation.
- Integrate Florida Friendly Landscaping educational workshop into the Rain Barrel workshops.

II. City Landscaping

- Exclusive use of Florida Friendly Landscaping on all City properties and parks.
- Use of Florida Friendly Landscaping in bioswales, vegetative strips, and rain gardens.

III. City Policies

- Encourage Florida Friendly Landscaping area for all new developments, buildings, and complete replacement of landscaping.

Topic: Natural Resources
Focus Area: Water
Indicator: Efficient Irrigation
Current Situation: Mix of Potable and Well Water Use
Goal: Reduce Water Use for Irrigation

Background

Irrigation is the 2nd leading use of water in the US behind only Agriculture. An estimated 50% of water is wasted using traditional irrigation methods due to evaporation, wind, and runoff. Watering after rain wastes water and money as well as negatively impacts local water quality due to additional runoff. Weather-Based irrigation controllers make irrigation systems more efficient by optimizing and adjusting the watering schedule.

Actionable Items

I. Community and Staff Engagement

Educational Material:

- CityScape Newsletter and REAL Magazine as well as information and links on the City Sustainability Webpage.
- Information on drip irrigation and information on Weather-Based Irrigation controllers on the Sustainability Page.
- How-To manual on drip irrigation for potted plants and information on Weather-Based irrigation controllers
- Educate City Employees on the benefits and facts of efficient irrigation systems such as drip irrigation and subsurface irrigation.

II. City Operations

Irrigation Upgrades:

- Replace spray irrigation with drip and subsurface irrigation in landscaping.
- Install Weather-Based irrigation controllers on city buildings. This adjusts the irrigation schedule based on weather events to reduce overwatering and waste.

III. City Policies

- Require drip and Weather-Based irrigation controllers on new construction projects and new irrigation projects.

Topic: Natural Resources
Focus Area: Water
Indicator: Efficient Use Indoors
Goal: Reduce Water Use by 20% by 2025 compared to 2023 Usage

Background

Buildings account for almost 14% of potable water use in the US. Water is all around us and is a seemingly endless resource, but potable water is a valuable and finite resource. Finding ways to use this resource more efficiently will help alleviate pressure on a strained water system. Securing the long-term viability of our water supply will have economic, health, and social benefits.

Actionable Items

I. Community and Staff Engagement

- CityScape Newsletter and REAL Magazine articles as well as information and links on the City Sustainability Webpage

II. City Operations

- Replace all toilets, faucets, and showerheads in City buildings with EPA WaterSense fixtures.
- Ensure pipes and connections are leak free and maintained.

III. City Policies

- Require WaterSense fixtures in all new construction and remodels of over 50%.*

*Pinellas County currently reviews indoor plumbing plans and would be responsible for review of this requirement.

Topic: Natural Resources
Focus Area: Water
Indicator: Potable Water Quality
Current Situation: Clean water with contaminant levels below MCL (Maximum Contaminant Level)
Goal: Remain Below MCL

Background

Water quality standards are set at the Federal and State levels. The Public Works Water Division regularly tests and publishes our drinking water in accordance with all State and Federal laws. The standards that Safety Harbor adheres to the Safe Drinking Water Act that has adopted EPA regulations and rules. Sources of urban water contamination include runoff from street stormwater, landscaping activities such as herbicides, pesticides, and fertilizer, improper dumping of liquids such as paints, oils, and chemicals.

Actionable Items

I. Community and Staff Engagement

- CityScape Newsletter and information on the Sustainability Webpage with links to the most up-to-date water quality report and SWFWMD.

II. City Operations

- Continue monitoring water quality in accordance with all State and Federal laws.
- Continue ensuring our water infrastructure abides by all laws and regulations and is well maintained.

Topic: Natural Resources
Focus Area: Green Spaces
Indicator: Protected Green Space in City
Current Situation: 189.49 Acres of Parks in Safety Harbor (Includes Philippe Park)
Goal: Maintain Healthy Green Spaces and Expand Where Possible

Background

Green Spaces in urban areas play an integral part in effective stormwater management. These areas allow stormwater infiltration to take place, keeping the stormwater off the roads and easing the burden on stormwater drains. This process also filters the stormwater and recharges our groundwater resources. Green Spaces are also linked to a happier and healthier population, giving residents areas for physical activity, community gatherings, and relaxation. Green Spaces have also been linked to improved mental health with a reduction in anxiety, stress, and depression.

Actionable Items

I. Community and Staff Engagement

- CityScape Newsletter and REAL Magazine as well as information and links on the City Sustainability Webpage about the benefits of Green Spaces and the amenities the city offers.
- Promote use of Green Spaces through events, education of health benefits, and staff engagement

II. City Operations

Land Acquisition

- Assess the feasibility of acquiring land to connect parks and Green Spaces, creating Green Corridors between Green Spaces
- Acquisition of vacant properties for Green Space uses including stormwater management, recreation, and urban agriculture.

Land Improvement

- Maintain and improve the Green Spaces the City already owns.

III. City Policies

- Maintain LOS (level of service) for parks and Green Spaces.
- Maintain Green Corridors and establish new ones when available.

Topic: Natural Resources
Focus Area: Green Spaces
Indicator: Presence of Heat Islands
Current Situation: Major Heat Islands include Downtown and around the Middle School
Goal: Reduce Intensity of the Heat Island Effect

Background

The Heat Island Effect is caused by the urban environment that absorbs sunlight and heat instead of reflecting it. These surfaces that absorb heat include expansive impervious surfaces such as parking lots, roads, and dark roofs. Areas in a heat island can have temperatures that are up to 7º F higher than the surrounding area. Areas with a heat island effect experience more heat related illnesses such as heat exhaustion, heat stroke, cramps, and dehydration.

Actionable Items

I. Community and Staff Engagement

- Articles in City Publications educating the public about the dangers of heat related illnesses that are exacerbated by the heat island effect.
- Educate the public about what they can do to help mitigate the heat island effect.

Tree Cover Projects:

- Maintain a well-developed tree canopy over major pedestrian corridors and green spaces.
- Continue preservation of our tree canopy and encourage residents to participate in the Street Tree Planting Program
- Conduct Tree Inventory to identify significant gaps in our tree canopy.

II. City Policies

- Maintain policies promoting the planting and protection of Florida Friendly Trees throughout the City.
- Continue to add to the City's urban forest.

Topic: Natural Resources
Focus Area: Green Spaces
Indicator: Percentage of Florida Friendly Landscape on City Property
Current Situation: Transitioning to 95% Native Vegetation
Goal: 95% Native Vegetation

Background

Florida Friendly Landscaping increases biodiversity and provides habitats for wildlife that would otherwise be displaced in our urban environment. Vital organisms such as bees, birds, lizards, and opossums create habitats in native vegetation and live in harmony with us in the urban environment. These organisms are natural pollinators and natural insect controllers keeping nuisances such as mosquitos, ticks, cockroaches, and other rodents. Florida-Friendly Landscaping will have a positive impact on City operating costs through reduced maintenance and irrigation costs.

Actionable Items

I. Community and Staff Engagement

- Online database of Florida Friendly Landscaping options and the best places to plant them.
- Create online gallery for residents to promote their Florida Friendly Landscape

II. City Policies

- All new landscaping on city properties will consist of Florida Friendly Landscaping.
- Ensure a diverse portfolio of Florida Friendly plant species to promote biodiversity within the city.

Topic: Natural Resources
Focus Area: Waste
Indicator: Recycling Percentage on City Property
Current Situation: 12.1%
Goal: 50%

Background

Florida State Statute 403.7032 sets a statewide goal for each county to reach a minimum of 75% of MSW must be recycled. Safety Harbor is dedicated to helping to achieve this 75% mark, at a minimum. Pinellas County operates a WTE plant that incinerates trash to create energy. The State credits Pinellas County with recycling credits through the WTE plant. At the municipal level, we are unable to accurately calculate those credits into our recycling rate. Promoting the use of recycling and having clear communication on what is recyclable is key to achieving this goal. Reducing overall waste generation will help increase the percentage of waste that is recycled. A portion of the trash we collect is sent to a Waste to Energy facility in Pinellas County. The State awards renewable energy credits based on the energy generated from the incinerated trash, we are unable to accurately calculate those figures in our overall recycling goals.

Actionable Items

I. Community and Staff Engagement

- Partnership with Pinellas County for a clear message and comprehensive list of materials that are recyclable.
- Ensure all residents have access to recycling services including recycling bins, their recycling pick up days, and access to information about what is recyclable.
- Establish a "Recycling Captain" in each Department/Building to drive recycling efforts in City Buildings

II. City Operations

- **Recycling:** Recycling bins in all City Buildings (break rooms and common areas), with graphics to help sort recycling.
- **Composting:** Compost bins in each City Building breakroom for employee use. The contents are to be collected and used at Folly Farm and/or other urban agriculture projects.
- **Textile Recycling:** Textile recycling program partnership with a 3rd party. This reduces overall waste generation and helps those in need.
- **Special Events:** Develop a Low-Waste Event Guide for events within City Limits with a focus on waste reduction and recycling.

III. City Policies

- Require new developments and new businesses to accommodate recycling efforts on the same level as garbage.

Topic: Resiliency
Focus Area: Storm Surge Mitigation
Strategy: Coastal Mangroves
Current Situation: Approximately 5 Miles of Coastline
Goal: Maintain Robust and Healthy Mangroves

Background

Mangroves are groups of trees and shrubs that are found in the coastal intertidal zones, and Safety Harbor has approximately 5 miles of intertidal zone. Mangroves protect our coastlines and provide habitats for a variety of wildlife including fish, amphibians, mammals, and birds. These mangrove forests average about 20' high around Florida, and Florida has approximately 600,000 acres of mangroves. Mangroves have the unique capability of thriving in saltwater environments. Mangroves are vital to the health of our coastlines and storm surge mitigation by slowing the rise of water and absorbing the force of wind and waves. Coastal communities with robust mangroves along their coasts experience less damage from storm surge and incur less financial burden from storm damages.

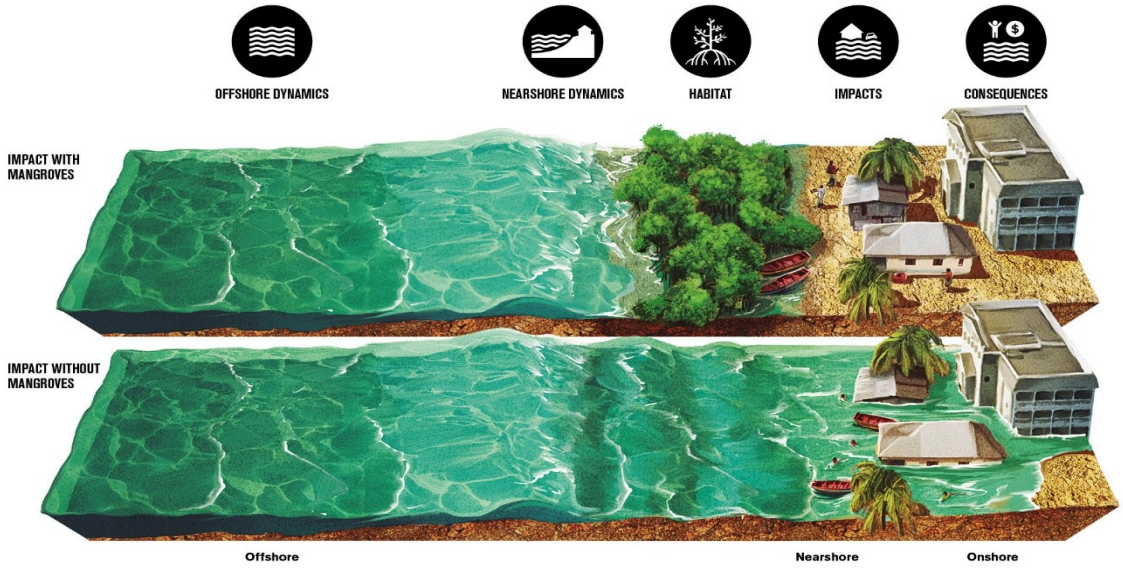

Figure 10: Mangroves protecting coastal areas from storm surge. Credit: World Bank

Actionable Items

I. *Community Engagement*
- Educational outreach efforts focused on coastal areas and waterfront property owners. Educational material will focus on the ecosystem services that mangroves and living shorelines provide the community including coastal protection, pollution control, and biodiversity.
- Fact sheet referencing State laws and County ordinances about what they can and cannot legally trim with or without a permit from the County and the possible implications of trimming their mangroves too short.

II. *City Operations*
- Conduct Mangrove Audit to determine our vulnerable areas and educate landowners in those vulnerable areas about the benefits of a robust mangroves.
- Monthly monitoring and special monitoring after severe weather events to ensure mangrove health.

Topic: Resiliency
Focus Area: Stormwater Management Biomimicry
Indicator: Low Impact Development (LID) Management Practices
Goal: Higher Level of LID for Future Development Plans

Background

Low Impact Development is the practice of mimicking the hydrologic cycle that results in the infiltration, evapotranspiration, or use of stormwater. LID practices aim to work with nature to manage stormwater as close to the source as possible and in the case of stormwater, the source is where precipitation contacts the surface. This biomimicry alleviates stress on the grey stormwater infrastructure, reducing the potential for backups, localized flooding, and greater volumes of runoff. By integrating LIDs into our landscape, we create a more sustainable and resilient stormwater management system that is capable of handling more stormwater volume, less expensive to maintain, and provides ancillary benefits such as better public health, a visually appealing landscape, and higher property values. The Peril of Flood Assessment commits to the encouragement of low impact development.

Actionable Items

I. *Community and Staff Engagement*
- Educational content on the City sustainability webpage about how residents can create their own LID projects on their properties such as rain gardens, rainwater harvesting, and Florida Friendly Landscaping.
- Signage near LID projects with an explanation about the benefits, key components, and how they work.

II. *City Operations*
- Integrating LIDs into the landscape and infrastructure with the aim of reducing the amount of stormwater runoff and reducing the impervious surface ratio.
- Implement Florida Friendly Landscaping on City properties that require minimal to no irrigation.

III. *City Policies*
- Policy 2.5.5 in the Peril of Flood Assessment states: When establishing the Capital Improvements Plan (CIP), the City shall give high priority to infrastructure improvements and other engineering solutions that will increase public health and safety by improving resiliency against projected sea-level rise. The City shall evaluate the use of green infrastructure designs, such as low impact stormwater designs, where feasible and effective.
- Policy 2.2.3 in the Infrastructure Element encourages the implementation of Low Impact Development (LIDs) in support of the master drainage plan. The City will also have a policy encouraging new developments to implement LID techniques in their designs.

Topic: Resiliency
Focus Area: Extreme Weather Event Adaption
Indicator: Resilient Infrastructure
Goal: Increase Resiliency for City Infrastructure

Background

Resiliency is the capacity to withstand and recover from difficulties, in this case extreme weather events and climate change. Integrating resiliency into city infrastructure now will ensure that we are prepared for future extreme weather events, that are projected to be stronger and more frequent. Raising vital equipment above worst-case scenario surge and flood levels ensures a quick recovery. Vital infrastructure including seawalls, green spaces, and storm surge pumps, and flood barriers should be upgraded, protected, and expanded to be prepared for the worst-case projections.

Actionable Items

I. *Community and Staff Engagement*
- Ensure that all residents have access to most up to date flood projection and flood risk maps so they can be proactive in their preparation.
- Continue providing sandbags to residents as storms approach.
- Educational booklets on how to prepare your property to mitigate the impacts of storm surge and floods.

II. *City Operations*
- Consider the installation of temporary flood containment systems, such as removable barriers to be installed similar to hurricane shutters to protect from flooding and storm surge.
- For each building, the City should consider elevating key equipment and where possible the full structure to mitigate flood risk to vital infrastructure and minimize repair costs following extreme weather events.

III. *City Policies*
- Policy 2.2.6 in Peril of Flood states that "The City shall consider the relocation, mitigation or replacement, as determined appropriate by the City, of infrastructure presently within the Coastal High Hazard Area when state funding for such infrastructure is anticipated."
- Utilize periodic audits of public facilities to determine the need for protection measures as stated in Policy 2.4.6 in Peril of Flood.

Topic: Resiliency
Focus Area: Resilient Energy Sources
Indicator: Resilient Infrastructure
Goal: Increase Resiliency for City Infrastructure

Background

Resiliency is the capacity to withstand and recover from difficulties, in this case extreme weather events and climate change. Integrating resiliency into city infrastructure now will ensure that we are prepared for future extreme weather events, that are projected to be stronger and more frequent. Modern infrastructure depends on a reliable supply of power to provide goods and services. Immediately after the storm, power helps the community recover quicker and protects public health. Depending on the severity of the storm, it can take days, weeks, and even months for power to be restored. Infrastructure that is powered by an onsite system, such as solar or wind power, can recover quicker than infrastructure the relies solely on the electrical grid.

Actionable Items

I. *Community and Staff Engagement*
- Educational material on the City Sustainable Webpage about different Solar + Storage systems with case studies about the benefits of these systems after a major weather event.

II. *City Operations*
- Install Solar + Storage systems on all City buildings deemed feasible by a Solar Feasibility Study.
- Ensure, as part of the Emergency Management Plan, that all solar battery systems are elevated above the 100-year storm surge levels and fully charged before the storm.

III. *City Policies*
- Conduct Solar Feasibility Study on City Buildings without solar periodically as market conditions change.

Topic: Resiliency
Focus Area: High Risk Property Acquisition
Goal: Prevent Future Loss of Life and Property

Background

Many coastal areas and low-lying areas are at high risk for costly storm damage. As sea level rise and the frequency and severity of storm surge, areas that are moderate or high risk now may increase their risk category to high or untenable. This repeated destruction puts unnecessary strain on state and local resources that could be otherwise used for other public goods and services.

Actionable Items

I. *City Policies*

- Peril of Flood Policy 3.3.1 states that "Where feasible, property which has received recurring major hurricane damage from storm surge should be publicly acquired or designated preservation or conservation on the Future Land Use Map to prevent redevelopment of the property to its pre-hurricane land use."
- The City reserves the right to consider relocating infrastructure out of coastal high hazard areas, reducing the permissible density of development, subjecting reconstruction to more stringent building and construction standards, or acquiring the land via eminent domain.

Appendix

Educational Materials & Other Resources

City of Safety Harbor

Sustainability and Resiliency Initiatives & Progress

Rules/Regulations

- Resolution 2019-08 and 2020-18 Committment to renewable, zero emission energy sources; environmental action plan, progress evaluations.
- 2020 - Readoption of PC Local Mitigation Strategy
- 2022 - Comprehensive Plan Update - Peril of Flood

Sustainable Mobility

- EV Charging Stations (Library)
- Sidewalk/Bicycle Facilities Master Plan

Community Commitment

- Public Survey - 2021
- Sustainable Public Programming & Resources
- Recycling

Energy

- Duke Energy Clean Energy Connection (CEC)
- LED Lighting
- Library Solar Panels (planned)
- Building Assessments (planned)

Water Conservation

- Code of Ordinances Sec. 24.40
- City Water Conservation Plan (required by FDEP) - 2021
- Encourage Florida Friendly and Drought Tolerant Plants (LDC 154.00)

Stormwater and Flooding

- Watershed Master Plan - in Progress
- Vulnerability Assessment - in Progress
- Flood Plain Coordinator/CRS

Environment

- Greenhouse Gas Emission Inventory Completed - 2022
- TBRPC Greenhouse Gas Reduction Action Plan - in Progress
- Integrated Vegetation Management - 2021
- ROW Tree Inventory - 2023

Keeping Your Landscaping Neat and Green

Provided by the City of Safety Harbor Public Works Department

Irrigation is not allowed daily for established landscaping.

- The City of Safety Harbor follows SWFWMD watering restrictions as per City Code of Ordinances Sec. 24.40.
  - Addresses ending in an even number (0, 2, 4, 6, 8): Thursday and/or Sunday.
  - Addresses ending in an odd number (1, 3, 5, 7, 9): Wednesday and/or Saturday.
  - Addresses with mixed or no addresses, such as common areas associated with residential subdivisions: Tuesday and/or Friday.
  - Lawn irrigation is prohibited between the hours of 10 a.m. and 4 p.m.

Irrigation for new landscaping and lawns.

- New lawns have a 60-day establishment period.
  - On days 1-30, they may be watered any day of the week.
  - During days 31-60, they may be watered three days per week. Even-numbered addresses may water only on Tuesday, Thursday and Sunday. Odd-numbered addresses may be watered only on Monday, Wednesday and Saturday.

Water Conservation Tips

- Hand watering and micro-irrigation of plants (other than lawns) can be done on any day at any time, if needed.
- Water only when plants or lawns start to wilt.
- Use soil moisture sensors and rain sensors with irrigation systems to automatically gauge water needs.
- If mowing is necessary, increase mowing height to the highest setting to reduce stress on lawns. The lower the cut, the less drought resistant the lawn will be over time.
- Make sure irrigation systems are operating at peak performance by checking and clearing filters in the system.
- Clean and properly direct sprinkler heads.
- Do not use fertilizer during dry conditions because it increases a lawn's thirst for water.
- Remove weeds to lessen competition for available water.
- Use mulch to keep moisture near roots of plants.

Mowing, Leaf Collection, Pet Waste, and Fertilizers

- Excess fertilizers and pesticides applied to lawns and gardens wash off, are carried through the storm sewer system, and pollute waterbodies causing algae blooms. Do not over fertilize or use pesticides during a forecasted rain event. A fertilizer buffer is in place adjacent to all waterbodies.
- Yard clippings (grass, brush, etc.) and leaves can wash into storm drains and can choke, suffocate, or disable aquatic life. Bag yard clippings and leaves for disposal on your garbage day.
- Be sure to cover piles of dirt or mulch being used in landscaping projects to prevent erosion.
- Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into storm drains and eventually into local waterbodies.

Tree Trimming and Pruning

- In 2015, the City Commission adopted a tree ordinance (Article X of the City of Safety Harbor Comprehensive Zoning and Land Development Code) including:
  - a protected tree list.
  - minimum tree planting requirements.
  - regulations for tree removal and replacement.
  - pruning standards.
  - procedures for enforcement of the tree ordinance.

Contact the City's Arborist for additional tree information.
(727) 724-1555 ex.1303

Safety Harbor

2019 Inventory of Government Operations Greenhouse Gas Emissions

APRIL 27, 2022

Produced by the City of Safety Harbor with Assistance from ICLEI – Local Governments for Sustainability USA

Credits and Acknowledgements

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Executive Summary

The City of Safety Harbor recognizes that greenhouse gas (GHG) emissions from human activity are catalyzing profound climate change, the consequences of which pose substantial risks to the future health, wellbeing, and prosperity of our community.

The City of Safety Harbor is committed to a resolution of clean energy targets as a part of Sierra Club's Ready for 100 clean energy campaign. The resolution sets goals to transition to renewable, zero- emission, clean energy use as follows:

- Organizational target of powering City facilities and operations with 100% renewable, zero emission energy sources no later than 2035.
- Commitment to support the transition of our community to 100% renewable, zero emission energy sources.

The first step is developing a GHG inventory to see how much GHGs each sector emits and then from there developing reduction strategies based off the inventory. This report provides estimates of greenhouse gas emissions resulting from activities within the City's government operations. This report gives evidence of the source of the most harmful sectors in Safety Harbor that have a major impact on the climate.

Key Findings

Figure 1 shows local government operations emissions. The Buildings and Facilities sector accounts for a vast majority (61.5 %) of these emissions. The next largest contributor is vehicle fleet (19.2 %), followed by employee commute (10.6 %), and Solid Waste Facilities (8.7 %). Actions to reduce emissions from these sectors will be a key part of any future climate action plan developed by Safety Harbor.

The Inventory Results section of this report provides a detailed profile of emissions sources within Safety Harbor; information that is key to guiding local reduction efforts. These data will also provide a baseline against which the city will be able to compare future performance and demonstrate progress in reducing emissions.

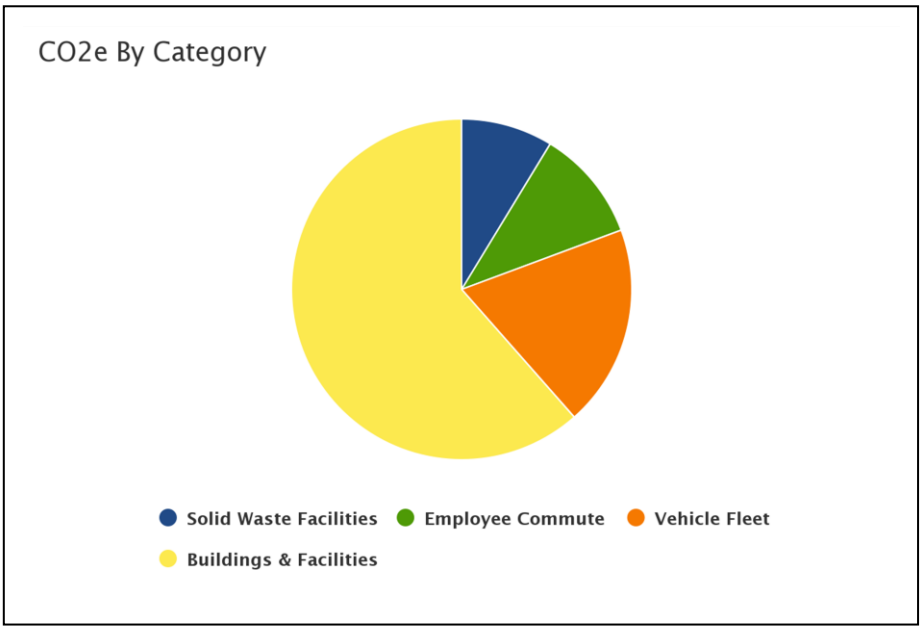

Figure 1: Government Operations Emissions by Sector

Introduction to Climate Change

Naturally occurring gases dispersed in the atmosphere determine the Earth's climate by trapping solar radiation. This phenomenon is known as the greenhouse effect. Overwhelming evidence shows that human activities are increasing the concentration of greenhouse gases and changing the global climate. The most significant contributor is the burning of fossil fuels for transportation, electricity generation and other purposes, which introduces large amounts of carbon dioxide and other greenhouse gases into the atmosphere. Collectively, these gases intensify the natural greenhouse effect, causing global average surface and lower atmospheric temperatures to rise, threatening the safety, quality of life, and economic prosperity of global communities. Although the natural greenhouse effect is needed to keep the earth warm, a human enhanced greenhouse effect with the rapid accumulation of GHG in the atmosphere leads to too much heat and radiation being trapped. The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report confirms that human activities have unequivocally caused an increase in carbon emissions[1]. Many regions are already experiencing the consequences of global climate change, and Safety Harbor is no exception.

Human activities are estimated to have caused approximately 1.0°C of global warming above pre- industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate (high confidence). Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts (high confidence), but these emissions alone are unlikely to cause global warming of 1.5°C (medium confidence). Climate-related risks for natural and human systems are higher for global warming of 1.5°C than at present, but lower than at 2°C (high confidence). These risks depend on the magnitude and rate of warming, geographic location, levels of development and vulnerability, and on the choices and implementation of adaptation and mitigation options (high confidence)[2].

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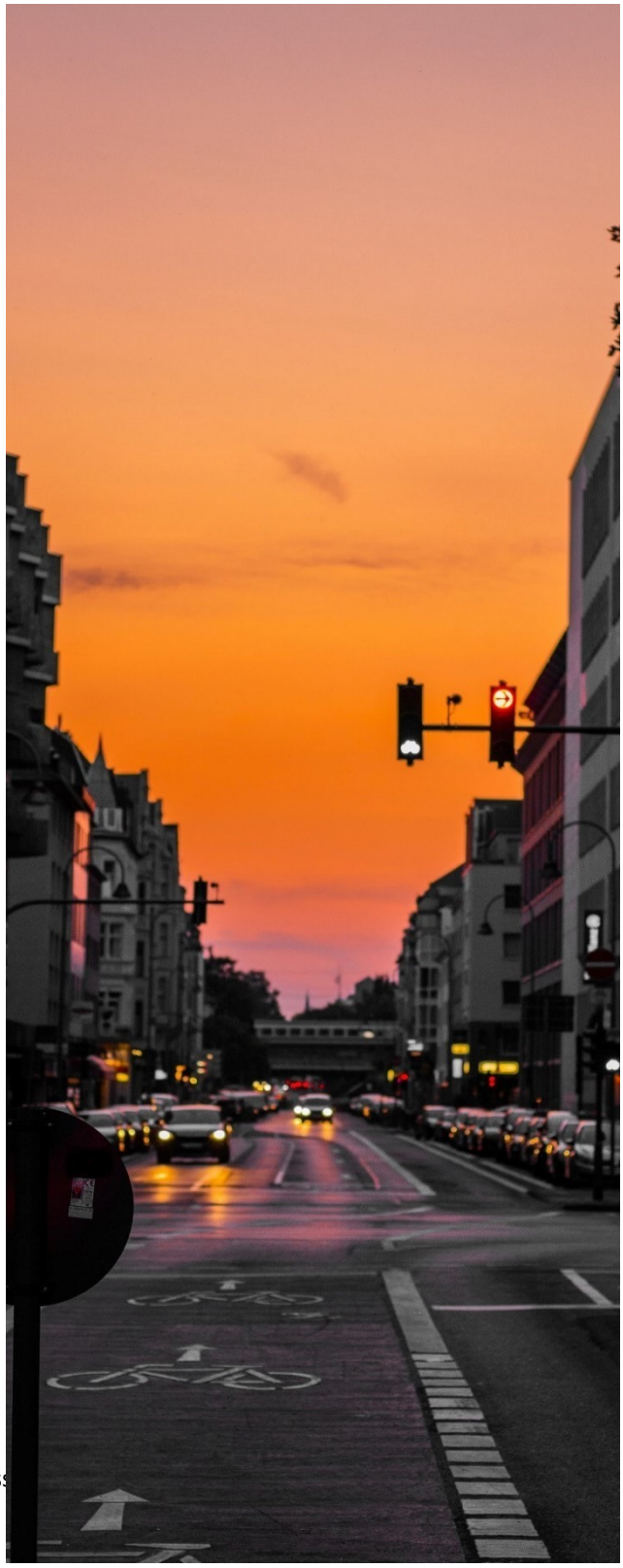
[1]IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

[2]IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. World Meteorological Organization, Geneva, Switzerland, 32 pp.

According to the 2019 National Climate Assessment, the southeast U.S. will experience potentially devastating impacts from seasonal changes and hazards occurring at unprecedented magnitudes. Florida, including Safety Harbor, is at particular risk for coastal hazards, such as flooding, erosion, and hurricanes that will continue to intensify with sea-level rise. So many people visit and move to this region to enjoy the beautiful coast, but its waterfront location also puts it at extreme risk. In addition, climate change will continue to produce warmer seasons and extreme temperatures that threaten many sectors within Safety Harbor and the greater region, most notably tourism, public health, and agriculture[3].

Many communities in the United States have started to take responsibility for addressing climate change at the local level. Reducing fossil fuel use in the community can have many benefits in addition to reducing greenhouse gas emissions. More efficient use of energy decreases utility and transportation costs for residents and businesses. Retrofitting homes and businesses to be more efficient creates local jobs. In addition, when residents save on energy costs, they are more likely to be spend at local businesses and add to the local economy. Reducing fossil fuel use improves air quality, and increasing opportunities for walking and bicycling improves residents' health.



[3] U.S. Global Change Research Program. 2019. National Climate Assess
https://nca2019.globalchange.gov/chapter/19/

Greenhouse Gas Inventory as a Step Toward Carbon Neutrality

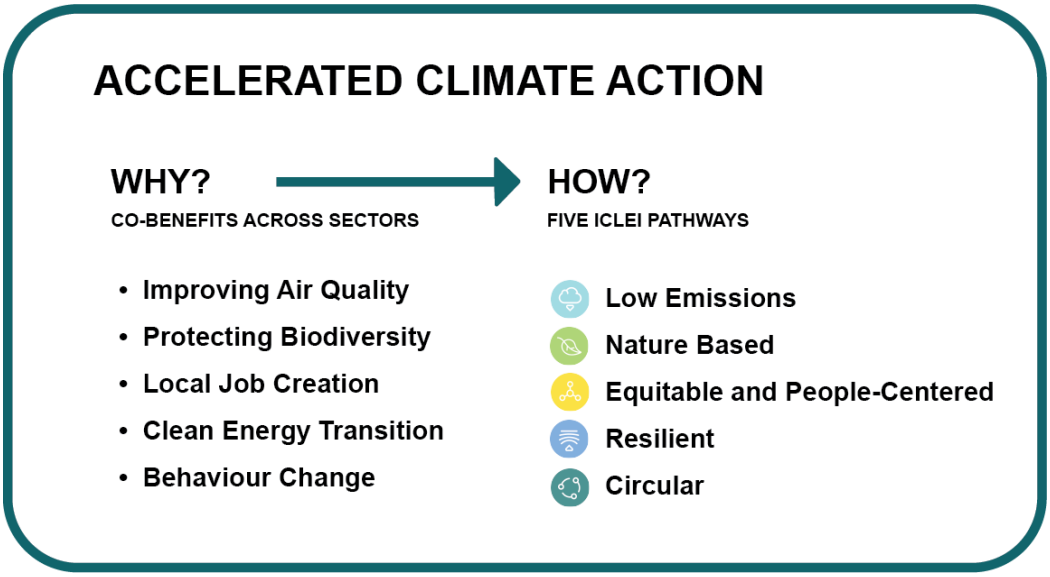
Facing the climate crisis requires the concerted efforts of local governments and their partners, those that are close to the communities directly dealing with the impacts of climate change.

Cities, towns, and counties are well placed to define coherent and inclusive plans that address integrated climate action — climate change adaptation, resilience, and mitigation. Existing targets and plans need to be reviewed to bring in the necessary level of ambition and outline how to achieve net-zero emissions by 2050 at the latest. Creating a roadmap for climate neutrality requires Safety Harbor to identify priority sectors for action, while considering climate justice, inclusiveness, local job creation and other benefits of sustainable development.

To complete this inventory, Safety Harbor utilized tools and guidelines from ICLEI - Local Governments for Sustainability (ICLEI), which provides authoritative direction for greenhouse gas emissions accounting and defines climate neutrality as follows:

The targeted reduction of greenhouse gas (GHG) emissions and GHG avoidance in government operations and across the community in all sectors to an absolute net-zero emission level at the latest by 2050. In parallel to this, it is critical to adapt to climate change and enhance climate resilience across all sectors, in all systems and processes.

To achieve ambitious emissions reduction, and move toward climate neutrality, Safety Harbor will need to set a clear goal and act rapidly following a holistic and integrated approach. Climate action is an opportunity for our community to experience a wide range of co-benefits, such as creating socio- economic opportunities, reducing poverty and inequality, and improving the health of people and nature.



ICLEI Climate Mitigation Milestones

In response to the climate emergency, many communities in the United States are taking responsibility for addressing emissions at the local level. Since many of the major sources of greenhouse gas emissions are directly or indirectly controlled through local policies, local governments have a strong role to play in reducing greenhouse gas emissions within their boundaries, as well as influencing regional emissions through partnerships and advocacy. Through proactive measures around land use patterns, transportation demand management, energy efficiency, green building, waste diversion, and more, local governments can dramatically reduce emissions in their communities. In addition, local governments are primarily responsible for the provision of emergency services and the mitigation of natural disaster impacts.

ICLEI provides a framework and methodology for local governments to identify and reduce greenhouse gas emissions, organized along Five Milestones, also shown in Figure 2:

1. Conduct an LGO inventory and forecast of local government greenhouse gas emissions.
2. Establish a greenhouse gas emissions target.
3. Develop an LGO climate action plan for achieving the emissions reduction target.
4. Implement the climate action plan.
5. Monitor and report on progress.

This report represents the completion of ICLEI's Climate Mitigation Milestone One and provides a foundation for future work to reduce greenhouse gas emissions in Safety Harbor.

Figure 2: ICLEI Climate Mitigation Milestones

Inventory Methodology

Understanding a Greenhouse Gas Emissions Inventory

The first step toward achieving tangible greenhouse gas emission reductions requires identifying baseline emissions levels and sources and activities generating emissions in the community.
This report presents emissions from operations of the Safety Harbor government. The government operations inventory is mostly a subset of the community inventory, as shown in Figure 3. For example, data on commercial energy use by the community includes energy consumed by municipal buildings, and community vehicle-miles- traveled estimates include miles driven by municipal fleet vehicles.

Figure 3: Relationship of Community and Government Operations Inventories

As local governments continue to join the climate protection movement, the need for a standardized approach to quantify GHG emissions has proven essential. This inventory uses the approach and methods provided by the U.S. Community Protocol for Accounting and Reporting Greenhouse Gas Emissions (Community Protocol) and the Local Government Operations Protocol for Accounting and Reporting Greenhouse Gas Emissions (LGO Protocol), both of which are described below.

Three greenhouse gases are included in this inventory: carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O). Many of the charts in this report represent emissions in "carbon dioxide equivalent" (CO2e) values, calculated using the Global Warming Potentials (GWP) for methane and nitrous oxide from the IPCC 5th Assessment Report.

Table 1: Global Warming Potential Values (IPCC, 2014)

Greenhouse Gas	Global Warming Potential
Carbon Dioxide (CO2)	1
Methane (CH4)	28
Nitrous Oxide (N2O)	265

Local Government Operations (LGO) Protocol

In 2010, ICLEI, the California Air Resources Board (CARB), and the California Climate Action Registry (CCAR) released Version 1.1 of the LGO Protocol.4 The LGO Protocol serves as the national standard for quantifying and reporting greenhouse emissions from local government operations. The purpose of the LGO Protocol is to provide the principles, approach, methodology, and procedures needed to develop a local government operations greenhouse gas emissions inventory.

The following activities are included in the LGO inventory:

- Energy consumption from buildings & facilities
- Municipal Waste treatment processes
- On-road and off-road transportation from vehicle fleet
- Transportation from employee commute

Quantifying Greenhouse Gas Emissions

Sources and Activities

Communities contribute to greenhouse gas emissions in many ways. Two central categorizations of emissions are used in the community inventory: 1) GHG emissions that are produced by "sources" located within the community boundary, and 2) GHG emissions produced as a consequence of community "activities".

Source	Activity
Any physical process inside the jurisdictional boundary that releases GHG emissions into the atmosphere	The use of energy, materials, and/or services by members of the community that result in the creation of GHG emissions.

By reporting on both GHG emissions sources and activities, local governments can develop and promote a deeper understanding of GHG emissions associated with their communities. A purely source-based emissions inventory could be summed to estimate total emissions released within the community's jurisdictional boundary. In contrast, a purely activity-based emissions inventory could provide perspective on the efficiency of the community, even when the associated emissions occur outside the jurisdictional

[4] ICLEI. 2008. Local Government Operations Protocol for Accounting and Reporting Greenhouse Gas Emissions. Retrieved from http://www.icleiusa.org/programs/climate/ghg-protocol/ghg-protocol

boundary. The division of emissions into sources and activities replaces the scopes framework that is used in government operations inventories, but that does not have a clear definition for application to community inventories.

Base Year

The inventory process requires the selection of a base year with which to compare current emissions. Safety Harbor's LGO greenhouse gas emissions inventory utilizes 2019 as its baseline year, for which the necessary data are available.

Quantification Methods

Greenhouse gas emissions can be quantified in two ways:

- Measurement-based methodologies refer to the direct measurement of greenhouse gas emissions (from a monitoring system) emitted from a flue of a power plant, wastewater treatment plant, landfill, or industrial facility.
- Calculation-based methodologies calculate emissions using activity data and emission factors. To calculate emissions accordingly, the basic equation below is used:

Activity Data x Emission Factor = Emissions

Most emissions sources in this inventory are quantified using calculation-based methodologies. Activity data refer to the relevant measurement of energy use or other greenhouse gas-generating processes such as fuel consumption by fuel type, metered annual electricity consumption, and annual vehicle miles traveled. Please see appendices for a detailed listing of the activity data used in composing this inventory.

Known emission factors are used to convert energy usage or other activity data into associated quantities of emissions. Emissions factors are usually expressed in terms of emissions per unit of activity data (e.g. lbs. CO2/kWh of electricity). For this inventory, calculations were made using ICLEI's ClearPath tool.

Government Operations Emissions Inventory Results

Government operations emissions for 2019 are shown in Table 3 and Figure 6.

Table 2: Local Government Operations Inventory

Sector	Fuel or source	2019 Usage	Usage unit	2019 Emissions ($MTCO_2e$)
Buildings & Facilities	Electricity	5642254	kWh	2584.2
	Natural Gas			
Buildings & Facilities total				**2584.2**
Street Lights & Traffic Signals				
Street Lights & Traffic Signals total				
Vehicle Fleet	Gasoline (off-road)	2691	Gallons	23.82
	Diesel (off-road)	3380	Gallons	34.79
	Gasoline (on-road)	17557.8	Gallons	155.35
	Diesel (on-road)	57747.4	Gallons	589.82
Vehicle Fleet total				**803.78**
Transit Fleet	Diesel			
	Gasoline			
Transit Fleet total				
Employee Commute	Gasoline	50515	Gallons	446.82
	Biodiesel/Ethanol			
	Electric			
	Hybrid Gasoline			
	PHEVs			
Employee Commute Total				**446.82**
Electric Power Production	Various Fuels for Power Generation			
Electric Power Production Total				
Solid Waste	Waste Generation	552.24	Tons	360.71
	Compost	76.08	Tons	5.3
Solid waste total				**366.01**

Water and wastewater	Digester Gas Flared			
	Digester Gas Combusted (used for boiler operations)			
	Nitrogen Discharge			
Water and wastewater total				
Process & Fugitive Emissions	Fugitive Emissions from Natural Gas Distribution			
Process & Fugitive Emissions total				
Total government emissions				**4200.81**

Figure 4 shows the distribution of emissions among the four sectors included in the inventory. Buildings and Facilities represents the majority of emissions, followed by Vehicle Fleet, Employee Commute and Solid Waste Facilities.

Next Steps:

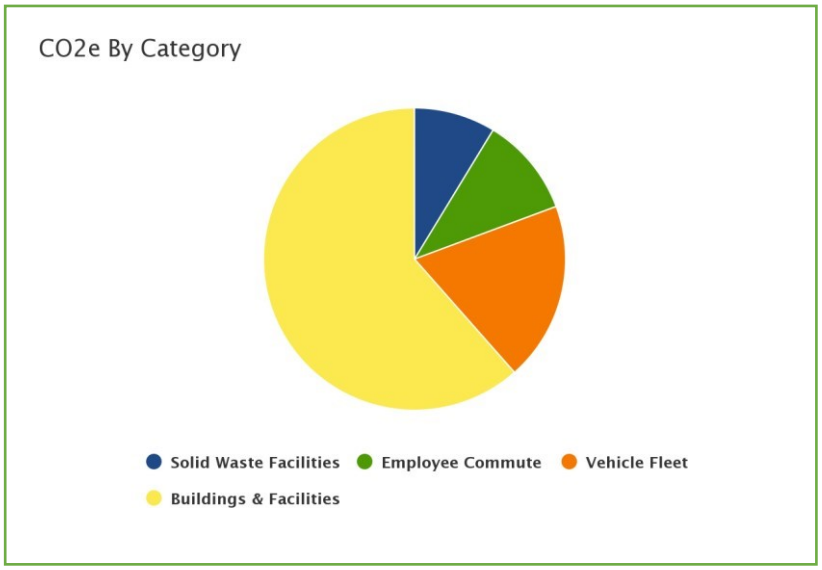


Figure 4: Local Government Operations Emissions by Sector

The local government operations emissions inventory points to a need for a cleaner energy source or less of need for electricity. More efficient buildings are needed as well as more renewable transportation methods are needed. This could include support of electric vehicle fleets. However, based on the DRVE tool calculations, Conversion to fully electric fleet could result in almost a complete reduction in GHG emissions from the cars themselves but more electricity will be needed which will produce some GHG

emissions in the electricity generation process but overall, less than the conventional fleet. Also, the cost to upgrade to a fully electric fleet would be almost two times more expensive than the current fleet. If there is funding available, this could be a great option for at least a portion of the vehicles in the fleet to switch to electric to help reduce GHG emissions. Results can be found here.

Conclusion

This inventory marks the completion of Milestone One of the Five ICLEI Climate Mitigation Milestones. The next steps are to forecast emissions, set an emissions-reduction target, and build upon the existing Ready for 100 Clean Energy Commitment with a more robust climate action plan that identifies specific quantified strategies that can cumulatively meet that target.

The Intergovernmental Panel on Climate Change (IPCC) states that to meet the Paris Agreement commitment of keeping warming below 1.5°C we must reduce global emissions by 50% by 2030 and reach climate neutrality by 2050. Equitably reducing global emissions by 50% requires that high-emitting, wealthy nations reduce their emissions by more than 50%. More than ever, it is imperative that countries, regions, and local governments set targets that are ambitious enough to slash carbon emissions between now and mid-century.

Science-Based Targets are calculated climate goals, in line with the latest climate science, that represent a community's fair share of the global ambition necessary to meet the Paris Agreement commitment. To achieve a science-based target, community education, involvement, and partnerships will be instrumental.

In addition, Safety Harbor will continue to track key energy use and emissions indicators on an on-going basis. It is recommended that communities update their inventories on a regular basis, especially as plans are implemented to ensure measurement and verification of impacts. Regular inventories also allow for "rolling averages" to provide insight into sustained changes and can help reduce the change of an anomalous year being incorrectly interpreted. This inventory shows that Buildings and facilities as well as communitywide transportation patterns will be particularly important to focus on. Through these efforts and others, the City of Safety Harbor can achieve environmental, economic, and social benefits beyond reducing emissions.

Appendix: Methodology Details

Energy

The following tables shows each activity, related data sources, and notes on data gaps.

Table 3: Energy Data Sources

Activity	Data Source	Data Gaps/Assumptions
Local Government Operations		
Electricity consumption	Duke Energy	
Natural gas consumption		

Table 4: Emissions Factors for Electricity Consumption

Year	CO_2 (lbs./MWh)	CH_4 (lbs./GWh)	N_2O (lbs./GWh)
2019	1007	41	6

Transportation

Table 5: Transportation Data Sources

Activity	Data Source	Data Gaps/Assumptions
Local Government Operations		
Government vehicle fleet	City of Safety Harbor records	
Employee commute	Employee Commute Survey	Exact mileage driven each day was estimated using the known zip codes of each employee's residency as well as their workplace.

For vehicle transportation, it is necessary to apply average miles per gallon and emissions factors for CH4 and N2O to each vehicle type. The factors used are shown in Table 6.

Table 6: MPG and Emissions Factors by Vehicle Type

Fuel	Vehicle type	MPG	CH_4 g/mile	N_2O g/mile
Gasoline	Passenger car	24.1	0.0183	0.0083
Gasoline	Light truck	17.6	0.0193	0.0148
Gasoline	Heavy truck	5.371652	0.0785	0.0633
Gasoline	Motorcycle	24.1	0.0183	0.0148
Diesel	Passenger car	24.1	0.0005	0.001
Diesel	Light truck	17.6	0.001	0.0015
Diesel	Heavy truck	6.392468	0.0051	0.0048

Solid Waste

Table 7: Solid Waste Data Sources

Activity	Data Source	Data Gaps/Assumptions
Local Government Operations		
Solid Waste Generation	Pinellas County Landfill	Based off community wide (11044.73 tons) of solid waste Assumed 5% of this solid waste to be generated by government owned operations
Composting	Pinellas County Landfill	Based off community wide (1521.58 tons) of yard waste to compost Assumed 5% of this yard waste to be generated by government owned operations

Inventory Calculations

The 2019 inventory was calculated following the US Community Protocol and ICLEI's ClearPath software. As discussed in Inventory Methodology, the IPCC 5th Assessment was used for global warming potential (GWP) values to convert methane and nitrous oxide to CO2 equivalent units. ClearPath's inventory calculators allow for input of the sector activity (i.e. kWh or VMT) and emission factor to calculate the final CO2e emissions.

ANNUAL REPORT 2022

Clean Energy Connection

Working in community
to transform the industry.

DUKE ENERGY®

OVERVIEW

CEC generated
129,990
megawatts of clean and renewable solar energy

In 2022, Duke Energy launched the Clean Energy Connection (CEC) program to bring the benefits of solar power to Florida customers. Residential and business customers of every kind now have the opportunity to support clean energy and share in the benefits of large-scale solar generation. CEC generated 129,990 megawatts of clean and renewable solar energy.

From local coffee shops to large corporations. Owners and renters of mobile homes, single-family homes, condominiums, and apartments. Government agencies and institutes of higher learning. Customers of Duke Energy in Florida can now "go solar" without the hassle and expense of installing their own panels.

By building on the concept of "shared solar" – where customers support solar energy through a subscription and earn bill credits and renewable energy certificates (RECs) on their subscriptions' portion of generation – Clean Energy Connection reimagines the way our customers view and consume solar power. We also set aside 26 megawatts of solar power for a special program that enables income-qualified customers to participate in a meaningful way.

Over the following pages, you'll see a summary of the progress Clean Energy Connection made in 2022. Adding solar sites, increasing enrollment, expanding geographic coverage, and planning for the future have been and will continue to be the keys to the success of this program. But above all, nothing will be as important as your participation and continuing support
as we strive to build on the milestones of the past year. We look forward to working with all of our customers to support the growth of clean energy and work in community to transform the entire industry.

"By subscribing to the Clean Energy Connection program and supporting solar sites like this one, our customers are joining a community that is helping drive Florida to a cleaner energy future."

– Melissa Seixas,

Duke Energy Florida president

CURRENT AND FUTURE SOLAR GENERATION CAPACITY

In 2022, we launched the first two solar centers in Hardee and Citrus counties, with four more facilities to open in 2023. Combined, these six sites will have a capacity of appropriately 450 megawatts.

Our current generation capacity is 150 megawatts, which is the equivalent of powering 46,000 Florida homes.*

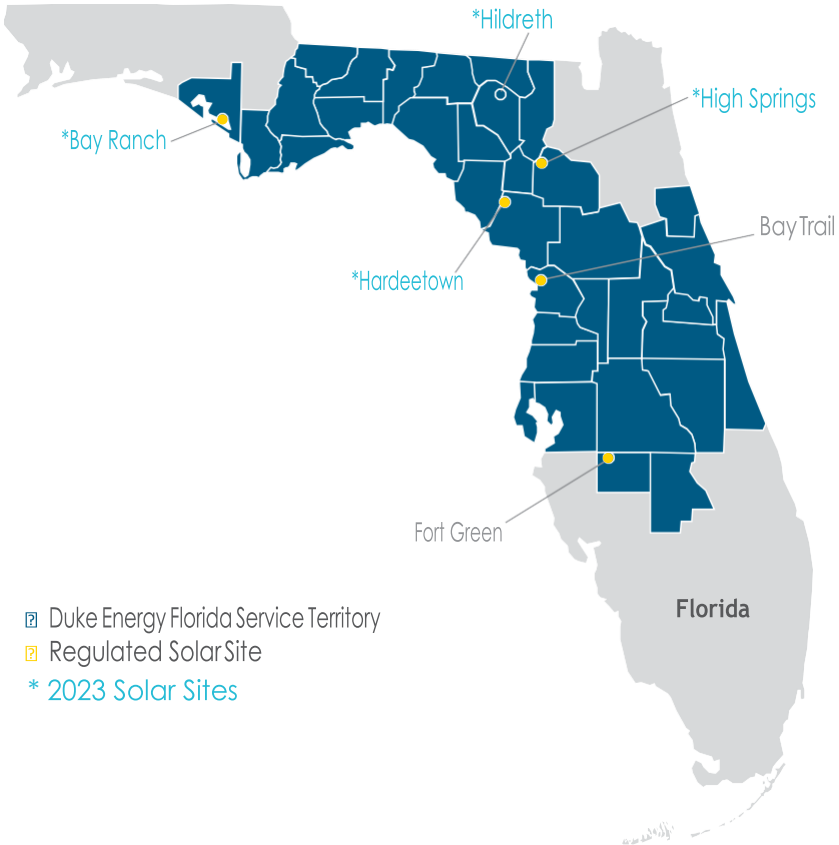
BAY TRAIL

Located on 500 acres in Citrus County, the 74.9-megawatt (MW) facility consists of approximately 197,000 tracking solar panels nestled among pollinator-friendly plants. These panels release no air emissions or waste and track the movement of the sun. At peak production, Bay Trail is capable of effectively producing enough electricity to power approximately 23,000 average-sized homes.

FORT GREEN

June 2022 brought the completion of Fort Green, the second facility completed in CEC's inaugural year. There are 65,000 fixed-tilt panels with a generation capacity of 74.9 MW. In addition to adding ongoing tax revenue for Hardee County, this site also created approximately 200-300 new construction jobs.

FLORDIA SOLAR SITES - CLEAN ENERGY CONNECTION



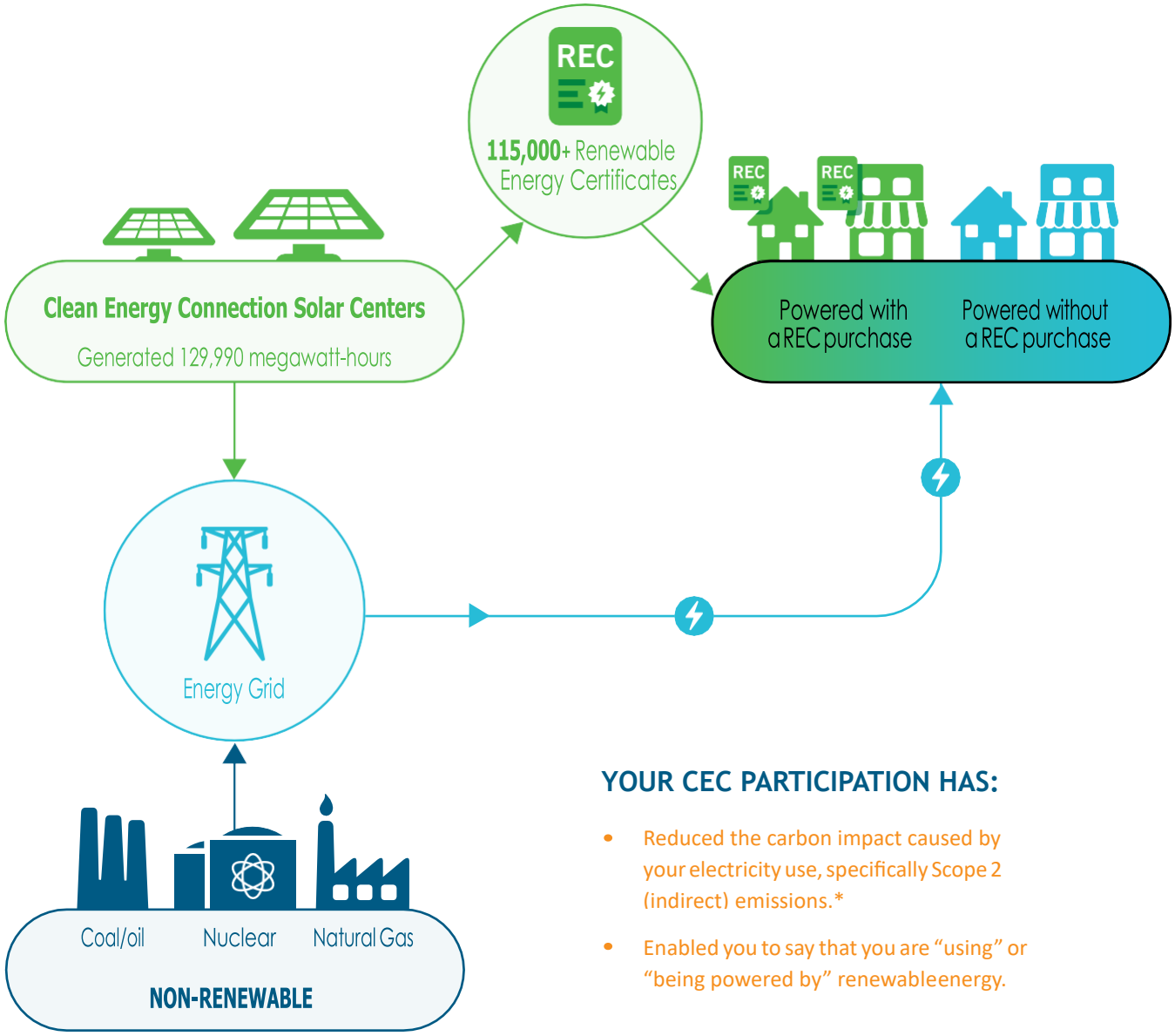
**Based on EPA equivalencies

YOUR CLAIMS TO RENEWABLE ENERGY GENERATED

Clean Energy Connection is all about expanding the presence and impact of renewable energy. The most common way of quantifying our success is in terms of the number of renewable energy certificates (RECs) that are earned and retired through the program. See the infographic below for more explanation of exactly what a REC is. When a REC is "retired," that means the renewable attributes of the energy generated cannot be claimed by anyone else. In 2022, your participation in Clean Energy Connection helped to retire more than 115,000 RECs.

UNDERSTANDING RENEWABLE ENERGY CERTIFICATES (RECS)

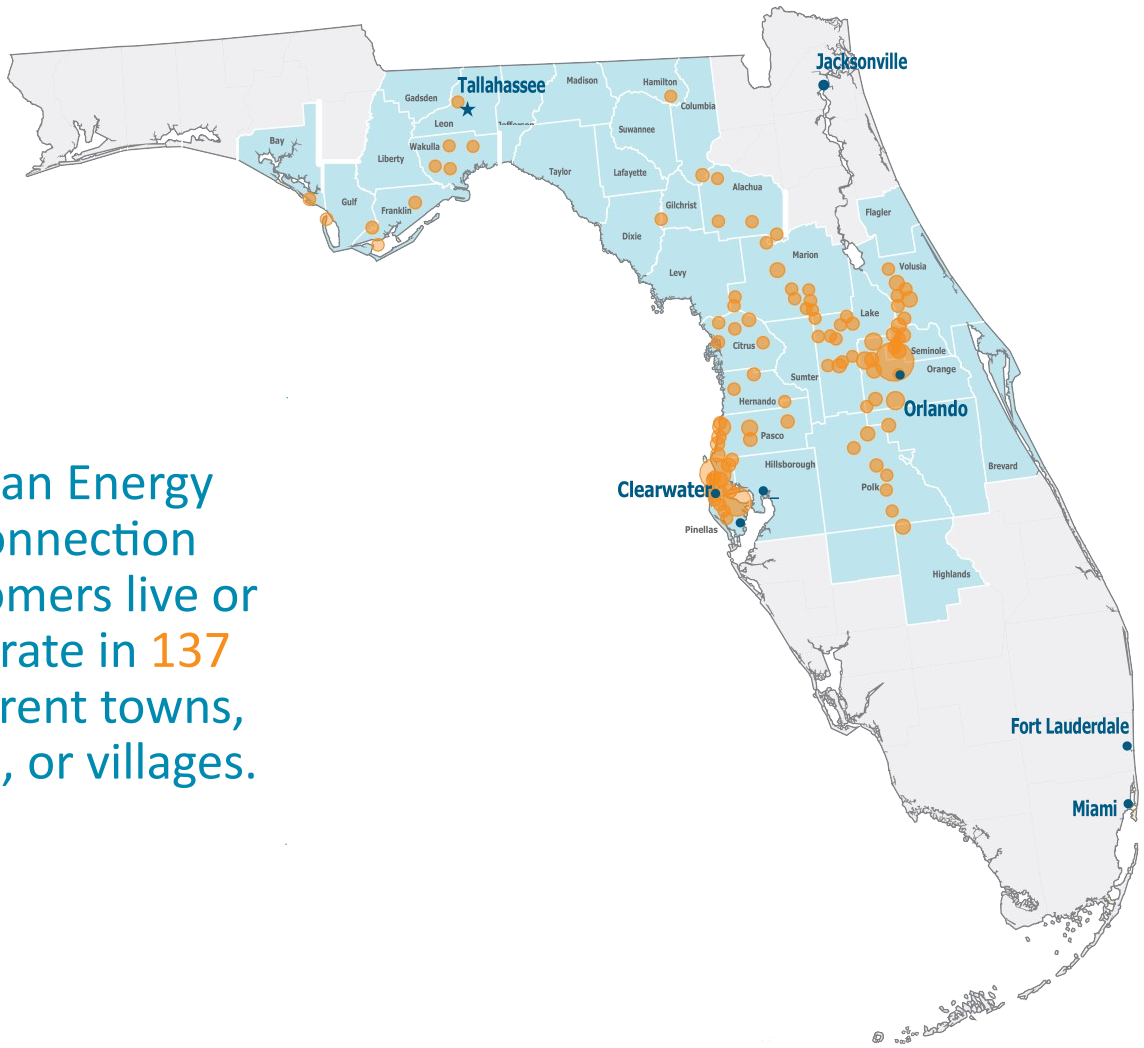
A renewable energy certificate (REC) grants you the rights to the environmental attribute associated with 1 megawatt-hour (MWh) of electricity generated from a renewable resource.



YOUR CEC PARTICIPATION HAS:

- Reduced the carbon impact caused by your electricity use, specifically Scope 2 (indirect) emissions.*
- Enabled you to say that you are "using" or "being powered by" renewableenergy.

** Scope 2 includes emissions that result from the generation of electricity, heat or steam purchased by your business from a utility provider. Source: https://www.epa.gov/greeningepa/greenhouse-gases-epa*



Clean Energy Connection customers live or operate in 137 different towns, cities, or villages.

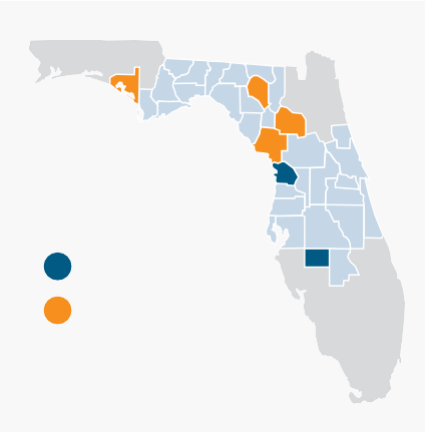
EXTENDING THE PROGRAM TO LOW-INCOME CUSTOMERS

As noted, we set aside 26 megawatts of generation capacity for a unique program targeted to the income-qualified audience. Through this program, participants pay a monthly subscription fee like other participants but are guaranteed to receive credits exceeding that monthly fee from the very start. This enables low-income customers to participate in the growth of clean energy while saving on their electric bill from the very first month in the program.

GROWING CLEAN ENERGY CONNECTION IN 2023 AND BEYOND

FUTURE PLANS

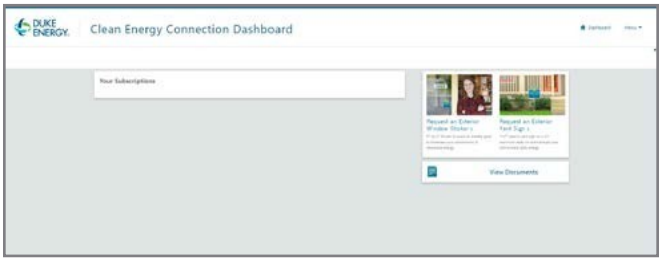
The next four sites for the program have already been selected. These sites are approximately 400-500 acres in size and are located in the following counties: Alachua, Bay, Levy and Suwannee. We also plan to add four more sites



MANAGING YOUR CLEAN ENERGY CONNECTION SUBSCRIPTION

MANAGE YOUR SUBSCRIPTION

Access the Clean Energy Connection dashboard to adjust your subscription.



FEEL FREE TO BRAG!

While you're logged in, request a yard sign or window sticker to let the world know you support Clean Energy Connection. Either one is much easier to install than a solar panel!

"Clean Energy Connection is the largest shared solar program that Duke Energy has ever had, and we are so grateful to our year-1 participants. It's exciting to be on the cusp of this transition, and I want to say thank you to our customers who have worked in community with us at Duke Energy to make the clean energy transition."

– Derick Farfan, Program Manager

THANK YOU!

DUKE ENERGY®

City of Safety Harbor

Wholesale Water Use Permit

Water Conservation Plan

Published: June 23, 2021

Prepared by:
City of Safety Harbor
Water Division
1200 Railroad Avenue
Safety Harbor, Florida 34695
Tel: (727) 724-1550

The City of Safety Harbor's Water Division promotes the conservation of water year-round. The City of Safety Harbor's water conservation initiatives currently in place will be carried forward to new development areas, along with enhancements to the program to assure an adequate supply of excellent quality potable water to meet the needs of City's residential and non-residential customers. Overall, the Goal of the City of Safety Harbor is long term sustainability of water resources.

Water Division Initiatives
Water Reuse

- The City of Safety Harbor's goal is to protect, maintain, restore, and enhance natural resources to maintain a living environment that supports a healthy, vibrant population and promotes the wellbeing of all citizens and the natural environment. The City shall maintain initiatives to conserve potable water resources. (*City of Safety Harbor Comprehensive Plan, Goals, Objectives, and Policies.)*
- The City shall adhere to SWFWMD and Pinellas County emergency water shortage restrictions when mandated by the District and the County. (C*ity of Safety Harbor Code of Ordinances Article V Section 24.)*
- The City of Safety Harbor shall encourage conservation of water resources by the enforcement of watering restrictions of customers, monitoring excessive water use and other active measures until non-compliance is corrected. The City of Safety Harbor shall follow SWFWMD and Pinellas County guidelines for yard watering. (*City of Safety Harbor Code of Ordinances Article V Section 24.)*
- The City shall encourage the use of drought tolerant plant and Florida Friendly materials to meet landscaping requirements. (*City of Safety Harbor Land Development Code Section 154.00.)*
- A meter replacement program is in place to replace aged meters and reduce unaccounted for water. Residential and commercial meters are targeted for replacement every 10 years.
- A meter calibration program is in place to ensure accurate meter readings, and the accuracy is within +- 5%. (*City of Safety Harbor Code of Ordinances Section 24.31.)*
- The City shall maintain a leak detection program to discover and eliminate wasteful losses of potable water from the City's water supply and distribution system. The program includes, but is not limited to:
    - Accounting system used to track individual users and identify higher than usual or large volumes of usage monthly.
    - Fire hydrants and valves in the distribution system inspected and maintained regularly. Logs are kept per FDEP regulations.
    - Monthly system usage is monitored for changes that could indicate potential leaks. Operations personnel are notified, and a system survey is requested if an area of concern is identified.
    - Meter readers and operations personnel are trained to watch for signs of system or service leaks and unaccounted water loss is monitored to identify potential areas of concern.
- The City shall evaluate and implement strategies to achieve a reduction in water

consumption through various water conservation measures, consumer education, and develop programs to identify and repair leaking pipes and plumbing fixtures. These strategies include website and social media postings, FAQs, and community meetings.

- The City shall promote the environmental awareness of its citizens and visitors on issues relating to protection, conservation, restoration, and appropriate use of our natural resources.
- The City shall endeavor to educate, using signage, brochures, press releases, and community meetings, the public on conservation issues.
- The City shall cooperate with SWFWMD and the U.S. Soil Conservation Service to implement water conservation programs.
- The City's Water Division shall coordinate with public entities, such as the Conserve Florida Water Clearinghouse (University of Florida), to obtain technical assistance in the collection of measurable baseline data that can be used to establish a set of benchmarks from which the effectiveness of the water conservation measures will be evaluated in the future.
- The City will maintain a tiered water rate structure to ensure conservation of potable water. (*City of Safety Harbor Code of Ordinances Sec. 24.18*.)
- The City will continue to develop and implement Capital Improvement Projects (CIP). The City of Safety Harbor constructs one (1) to two (2) water main projects annually which has decreased water main breaks on aging infrastructure thus saving water. These CIPs aid in the conservation efforts that will maximize our water resources. *(City of Safety Harbor Comprehensive Plan, Goals, Objectives, and Policies.)*

Commercial Initiatives

- Water use is monitored and reviewed monthly for large commercial consumers.
- Water conservation presentations are made to community groups and during the annual Citizens academy.
- High usage customers are contacted and provided with water conservation information.
- Rates structures are analyzed periodically to determine effectiveness. We are scheduled to conduct a rate study during the FY21/22 budget year.

Residential Initiatives

- Water conservation presentations are made to community groups and during the annual Citizens Academy.
- High usage customers are contacted and provided with water conservation information.
- Rates structures are analyzed periodically to determine effectiveness. We are scheduled to conduct a rate study during the FY21/22 budget year.