



SUSTAINABILITY ACTION PLAN

PROJECT TEAM

« RESOURCE CONSERVATION & EFFICIENCY

- Tom Camaj, Contracts Coordinator
- Donna Carlson, Detective
- Gregg Harris, Capital Projects Manager
- Alex Vera, Police Officer / SWAT / Training

« MATERIALS MINIMIZATION & RECYCLING

- Gary Gibson, Operations Manager
- Jane Graham, Assistant City Attorney
- Sonia Quinones, Police Chief
- Carolyn Smith, Procurement Specialist

« LAND USE & TRANSPORTATION

- Stephanie Delgado, Special Projects Coordinator
- Eric Houston, Transportation & Transit Planner
- Yamil Lobo, Fleet Administrator
- Beverly Sanders-Mayweather, Director of Human Services

« NATURAL RESOURCES & RESILIENCY

- Mark Ellis, Fire Chief
- Mary Francis Jeannot, Assistant Director of Public Works/Administration
- Mariana Pitiriciu, Assistant Director of Public Works / City Engineer
- Bret Warren, Public Service Worker II
- Steve Wold, Operations Manager / Utilities

« EDUCATION & OUTREACH

- Charity Latt, Administrative Assistant
- Denton Lewis, Application Support Analyst
- Kristin Ramirez, Special Events Coordinator
- Sherlie Sininger, Bluesten Park Recreation Supervisor

« FUNDING & EVALUATION

- Nydia Rafols, Deputy City Manager
- Noemy Sandoval, Senior Accountant
- Chris Swain, Chief Electrical Inspector

« SUPPORT STAFF

- Steven Parkinson, Assistant City Manager/Director of Public Works
- Greg Chavarria, Assistant City Manager / Chief Information Officer
- Jeremy Earle, Assistant City Manager
- Keven Klopp, Director of Development Services
- James Sylvain, Assistant Director, Public Works/Utilities
- Harry Crooks, Water Plant Operator C
- Lina Duran, Business Development Coordinator
- Manga Ebbe, Project Manager
- Eustacio LaRosa, Public Works Superintendent
- Meghan Peteler, Administrative Assistant
- Jesus Rodriguez, Fleet Service Superintendent



PROJECT OVERVIEW



FOCUS AREAS



RESOURCE CONSERVATION
& EFFICIENCY



MATERIALS MINIMIZATION
& RECYCLING



LAND USE &
TRANSPORTATION



NATURAL RESOURCES
& RESILIENCY



EDUCATION & OUTREACH



FUNDING & EVALUATION

CITY OPERATIONS BASELINE ASSESSMENT



RESOURCE CONSERVATION & EFFICIENCY

- About \$3.5M expenditure per year on electricity, water & fleet
- Performance Contracting
- FPL replacing LED streetlights
- Alternative Water Use, Xeriscaping



MATERIALS MINIMIZATION & RECYCLING

- 5% recycling diversion rate (National rate ~35%)
- Waste generation 9% higher than national average
- \$1.2 million spent on disposal of waste
- \$37,000 in recycling revenue



LAND USE & TRANSPORTATION

- Compact, urbanized form is inherently sustainable
- Comprehensive Plan and Zoning support sustainable land use
- Parks in process of major upgrade
- Better alternatives to automobile travel are needed
- Green Building Program

CITY OPERATIONS BASELINE ASSESSMENT



NATURAL RESOURCES & RESILIENCY

- Limited natural areas remaining in City
- City is vulnerable to climate change, storms, flooding
- Updating Comprehensive Plan to address sea level rise, flooding & climate change



EDUCATION & OUTREACH

- Green Initiatives Program – website, newsletters, events, workshops
- Member of Southeast Florida Climate Change Compact
- Strong, developing sustainability culture within City departments



FUNDING & EVALUATION

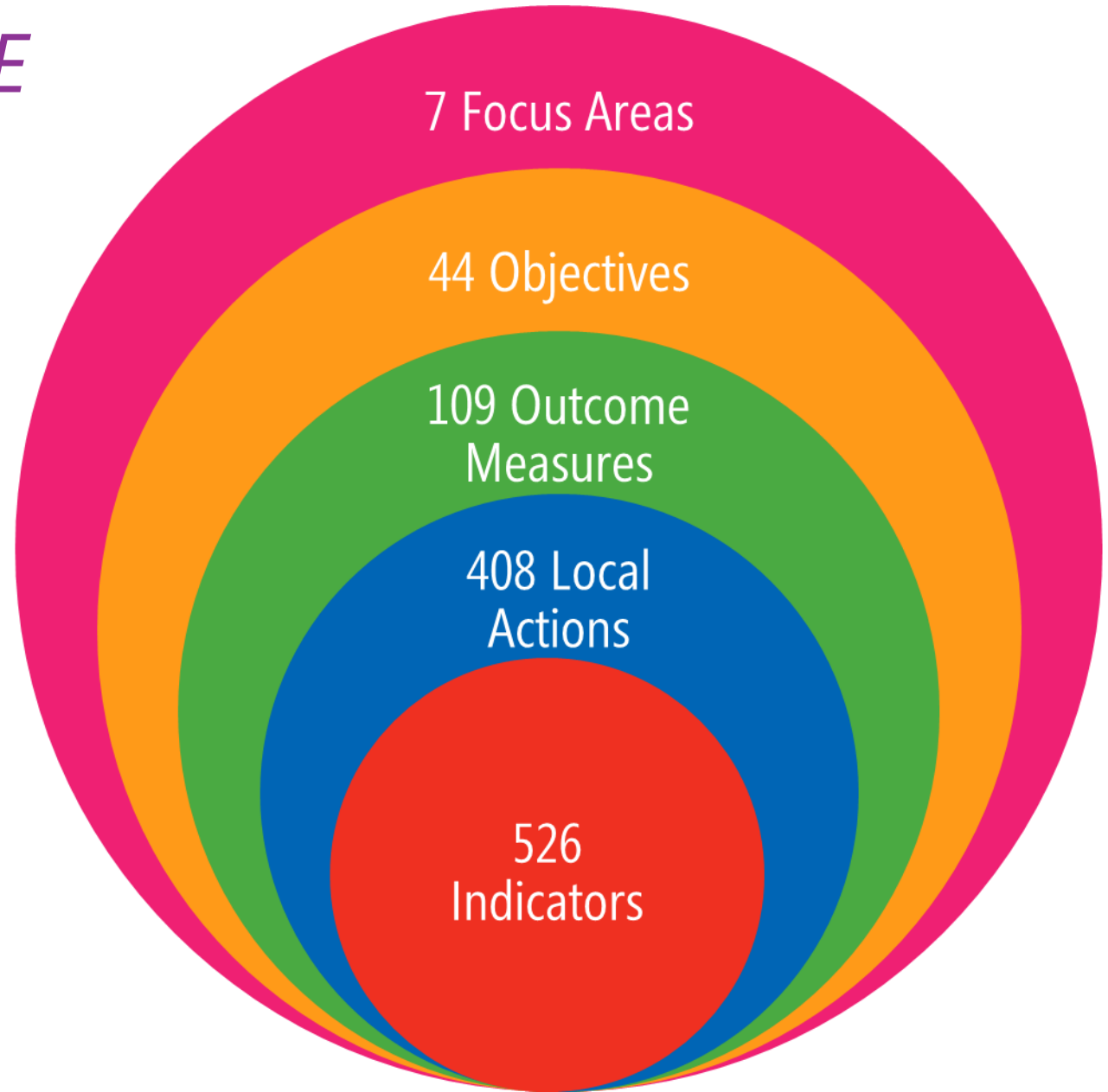
- Diverse sources of potential funding for sustainability projects (bonds, impact fees, developer fees, special funds, service fees, etc.)
- Strategic plan already includes sustainability projects / goals
- No systematic process for collecting and managing sustainability data

COMMUNITY BASELINE ASSESSMENT

« STAR Communities

« 3rd Party Rating
System for
Sustainable
Communities

« Allows meaningful
comparisons
between cities



BENCHMARKING



Albany, NY; Atlanta, GA; Beaverton, OR;
Birmingham, AL; Chandler, AZ;
Cleveland, OH; Des Moines, IA; El Cerrito,
CA; Fayetteville, AR; Ft Collins, CO;
Houston, TX; Indianapolis, IN; Las Cruces,
NM; **Lee County, FL; Monroe County,
FL; Palm Bay, FL; Park Forest, IL;**
Phoenix, AZ; **Pinecrest, FL;** Reading, PA;
Riverside, CA; Rosemount, MN; St. Louis,
MO, **St. Petersburg, FL**

➤ **200-399 Points**

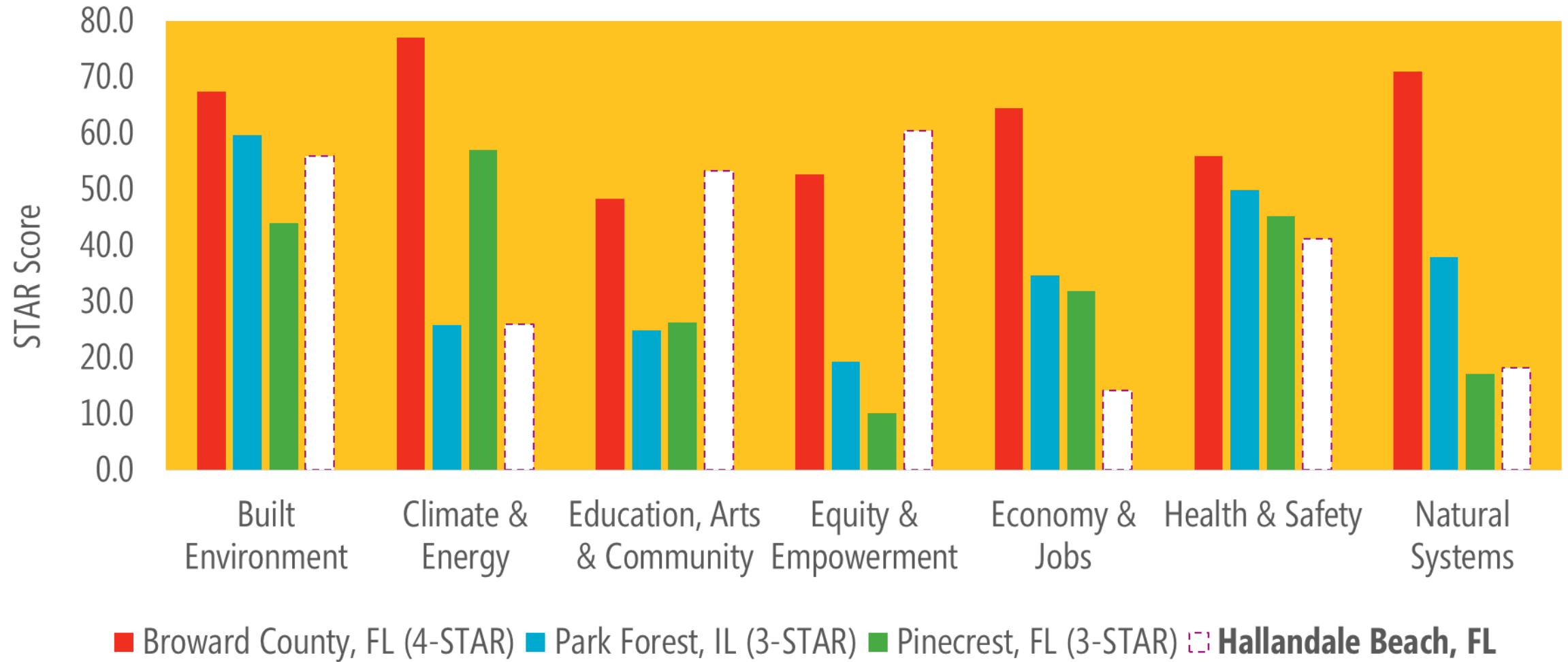
➤ **36 Cities**

Hallandale Beach Baseline*

Goal Area	Potential Score	% Complete
Built Environment	56	56%
Climate & Energy	26	26%
Education, Arts & Community	53	76%
Equity & Empowerment	60	60%
Economy & Jobs	14	14%
Health & Safety	41	41%
Natural Systems	18	18%
Total	269	37%

*Score may increase with implementation of SAP

BENCHMARKING



COLLABORATION

- « Kick-off Meeting with Staff
- « Facility Walkthroughs
- « Meetings with Commissioners
- « Two Community Workshops
- « Two Day Staff Workshop
- « 8 Week Intensive Engagement
 - 6 Staff Focus Groups
 - 3 Meetings Each
 - 18 Total Meetings
- « Weekly Meeting w/ Green Initiatives Coordinator



VISION

The City of Hallandale Beach will lead in raising awareness, reducing waste and pollution, and implementing clean technology and infrastructure – while generating measurable, cost effective and enduring economic, social and environmental benefits – to improve the quality of life in our resilient coastal community now and into the future.



GOALS

BY 2022

<p>RESOURCE CONSERVATION & EFFICIENCY</p>  <ul style="list-style-type: none"> Reduce electricity consumption of City operations by 15% Reduce potable water consumption of City operations by 20% Displace 10% of gasoline / diesel fuels with fuel efficiency or alternative fuels* 	<p>MATERIALS MINIMIZATION & RECYCLING</p>  <ul style="list-style-type: none"> Achieve a 30% diversion rate from recycling and composting Reduce total waste from City operations by 5% through source reduction 	<p>LAND USE & TRANSPORTATION</p>  <ul style="list-style-type: none"> Establish targeted green building standards for new public, commercial and multifamily buildings and infrastructure Increase existing percentage of the bicycle/ pedestrian network that attains Level of Service B or better by 10% annually
<p>NATURAL RESOURCES & RESILIENCY</p>  <ul style="list-style-type: none"> Complete a vulnerability assessment and adaptation action plan Improve the City's Community Rating System classification to 5 Complete a dune management plan 	<p>EDUCATION & OUTREACH</p>  <ul style="list-style-type: none"> Train and achieve commitment from 100% of employees to understand and contribute to sustainability initiatives Develop a sustainability communications plan 	<p>FUNDING & EVALUATION</p>  <ul style="list-style-type: none"> Fund sustainability action plan projects with 50% internal funds, 50% external funds (grants and developer contributions) Measure and monitor 50% of 19 sustainability key performance indicators

*Alternative fuels include electric vehicles

GOALS

BY 2040

NATURAL RESOURCES & RESILIENCY	 <p>Reduce electricity consumption for City operations, commercial and residential sectors by 40%</p> <p>Reduce potable water consumption for City operations, residential and commercial Sectors by 40%</p> <p>Displace 90% of gasoline/diesel fuels with fuel efficiency or alternative fuels*</p>	MATERIALS MINIMIZATION & RECYCLING	 <p>Achieve a 75% diversion rate from recycling (45%) and composting (30%)</p> <p>Reduce total waste from City operations by 20% through source reduction</p>	LAND USE & TRANSPORTATION	 <p>Establish standards for existing public, commercial and multifamily buildings and infrastructure; all eligible structures will meet the City's standards</p> <p>Achieve a balanced transportation system with no single mode having more than 30% of total trips</p>
	 <p>Implement the vulnerability assessment and adaptation action plan</p> <p>Improve the City's Community Rating System classification from a 5 to a 4</p> <p>Restore dunes along all beaches</p>		 <p>Require all employees to contribute to a sustainability project</p> <p>Involve 80% of full-time residents in the City's sustainability initiatives, resulting in national recognition</p>		 <p>Fund Sustainability Action Plan projects with 20% internal funds, 80% external funds, including revolving funds</p> <p>Measure and monitor 100% of 19 key performance indicators</p>

*Alternative fuels include electric vehicles

PROJECTS

LED Streetlights / LED Interior Lighting / Solar Thermal Systems / Existing City Building Commissioning / **Electric Vehicles & Infrastructure** / Increase Fuel Economy / Indoor Water Fixtures and Fittings Efficiency / **HVAC controls** / Right Size Fleet / Expand Reuse Water Projects / Expanded Service Hours Work Week / Irrigation Efficiency / **Increase Community-wide Waste Diversion** / Green Purchasing Program / Composting Feasibility Assessment / Bikeshare

\$7M Revenue / Avoided Costs
\$2.3M Net Benefit

Build out Bicycle and Pedestrian Infrastructure / Develop a Vulnerability & Adaptation Assessment / Dune Protection Plan / Low Impact Development Standards / Integrate Sustainability into Employee Training / Communications Plan / Develop Green Event Policies / Utility Management System / Revolving Fund / Complete a Greenhouse Gas Inventory & Set Reduction Targets / STAR Communities Certification

LED STREETLIGHTS

- « NPV: \$78,000
- « ROI: 58%
- « Contribution to Electric Consumption Goal: 12%
- « Lead Department / Division:
- « Public Works
- « Responsibility: Operations Manager



HVAC CONTROL

- « NPV: \$174,000
- « ROI: 136%
- « Contribution to Electric Consumption Goal: 4%
- « Lead Department / Division: Public Works
- « Responsibility: Operations Manager



ELECTRIC VEHICLES & INFRASTRUCTURE

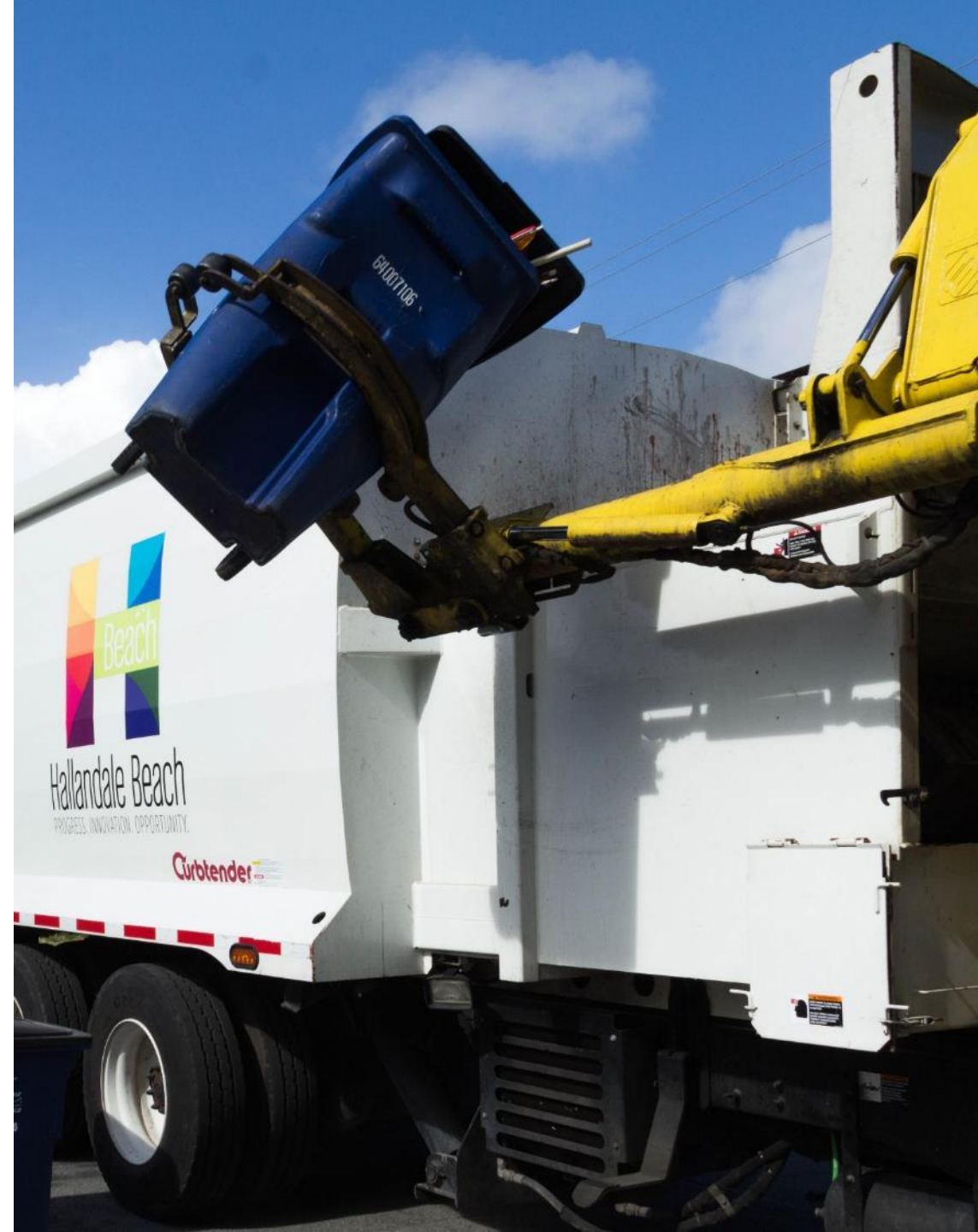
- « NPV: \$71,000
- « ROI: 287%
- « Contribution to Gasoline / Diesel Fuel Displacement Goal: 25%
- « Lead Department / Division: Public Works
- « Responsibility: Fleet Administrator



RECYCLING*

- « NPV: \$1,066,000
- « ROI: 54%
- « Contribution to Waste Diversion Goal: 100%
- « Lead Department / Division: Public Works
- « Responsibility: Sanitation Superintendent, Public Works Director and Recycling Coordinator

**If solid waste collection is monetized (the franchise is sold), funds will be allocated from continuing franchise fee revenue to maintain the materials diversion process.*



FUTURE PROJECTS

- « Expanded Service Hours
- « Green Building & Operations Standards
- « Alternative Fuels & Infrastructure Feasibility Assessment
- « Mangrove Restoration
- « Institutionalize Sustainability Management among Staff & Citizens



TABLE 5: HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT PORTFOLIO

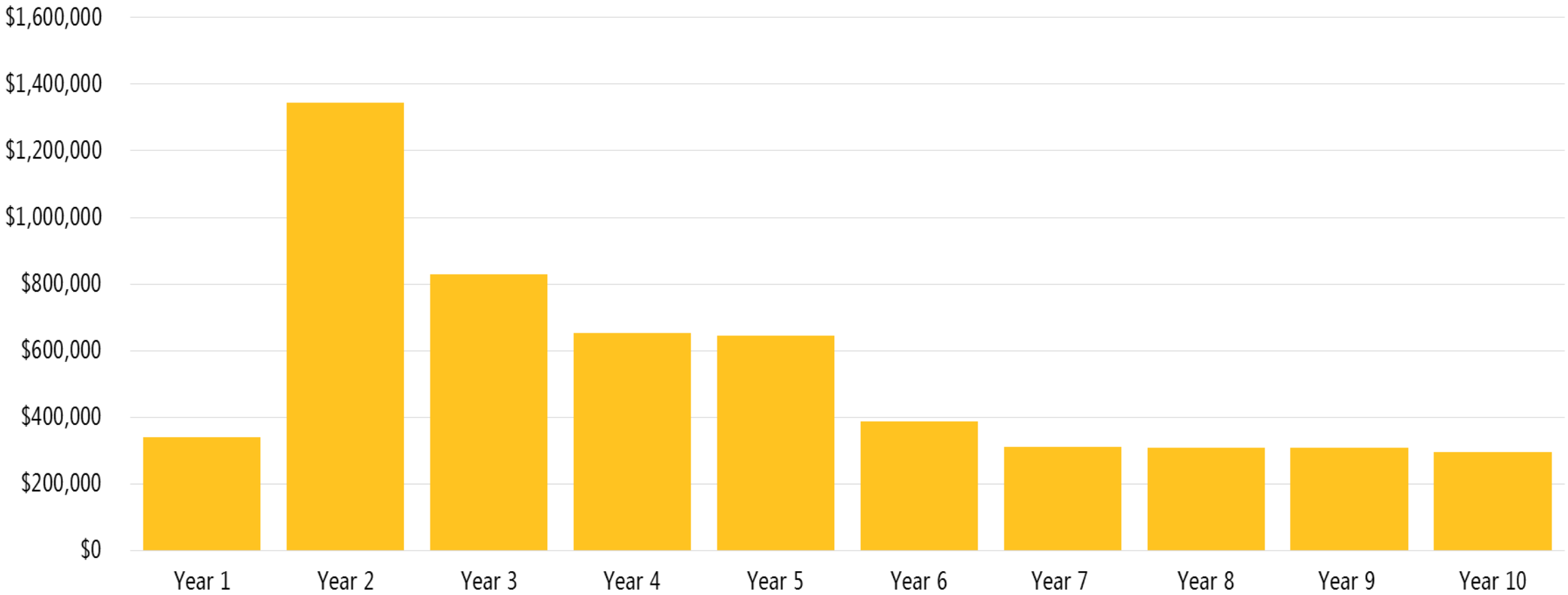
Project Name	Net Benefit
LED Streetlights	\$78,000
LED Interior Lighting	\$24,000
Solar Thermal Systems	-\$21,000
Existing City Building Commissioning	\$124,000
Electric Vehicles & Infrastructure	\$90,000
Increase Fuel Economy	\$118,000
Indoor Water Fixtures & Fittings Efficiency	\$19,000
HVAC controls	\$174,000
Right Size Fleet	\$447,000
Expand Reuse Water Projects	\$148,000
Expanded Service Hours Work Week	\$765,000
Irrigation Efficiency	-\$7,000
Increase Community-wide Recycling	\$1,066,000
Green Purchasing Program	\$12,000
Composting Feasibility Assessment	-\$48,000
Bikeshare	\$0
Build-out Bicycle & Pedestrian Infrastructure	-\$660,000
Develop a Vulnerability/Adaptation Assessment	-\$82,000
Dune Protection Plan	\$0
Low Impact Development Standards	\$0
Integrate Sustainability into Employee Training	\$2,000
Communications Plan	\$0
Develop Green Event Policies	\$0
Utility Management System	\$19,000
Revolving Fund	\$0
Complete a Greenhouse Gas Inventory & Set Reduction Targets	-\$24,000
STAR Communities Certification	-\$13,000
TOTAL	\$2,231,000

Net benefit is the benefit remaining after all costs have been recouped. The Project Team anticipates that these projects will accomplish the majority of the SAP's five-year goals (Figure 1). As next steps are taken, goals will be fully attained.¹

TABLE 7: ESTIMATED SUSTAINABILITY ACTION PLAN BUDGET

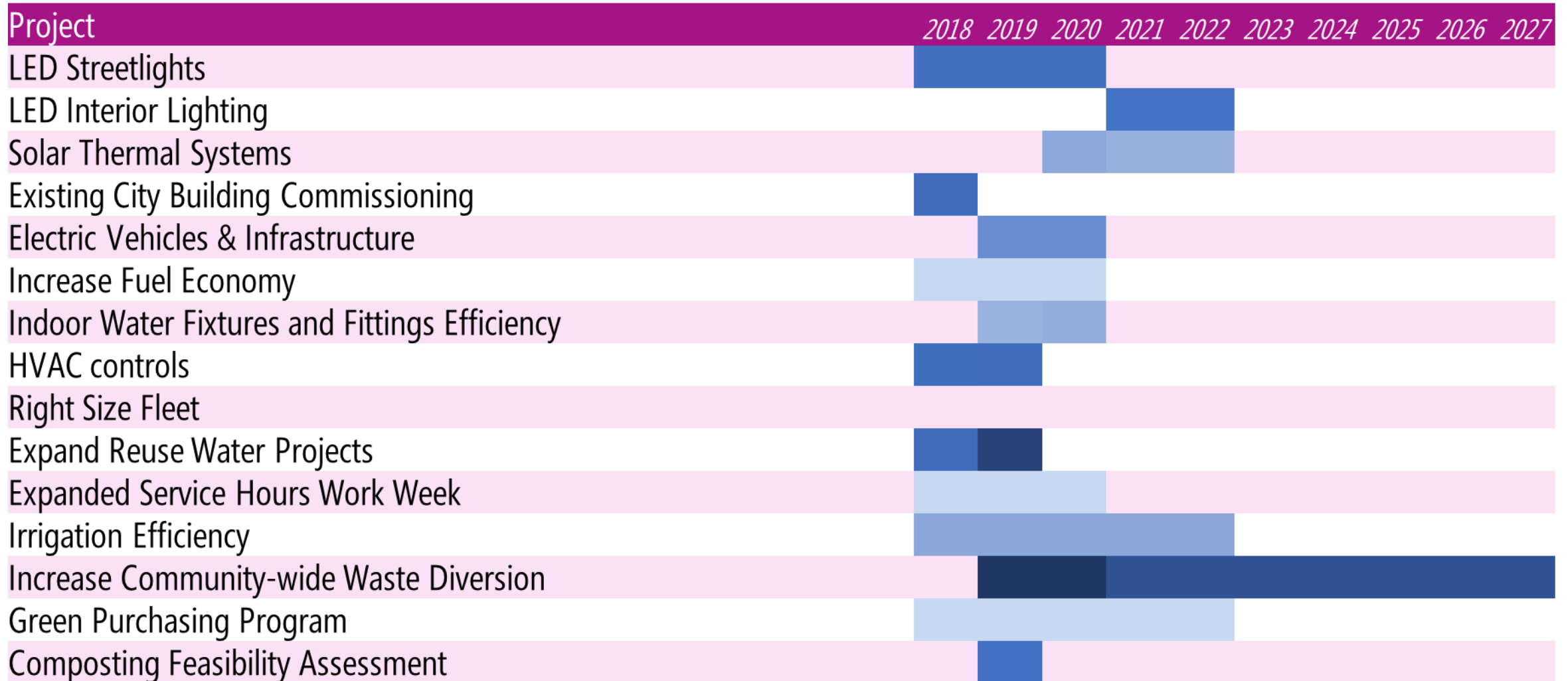
Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total
LED Streetlights	\$64,333	\$64,333	\$64,333	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$193,000
LED Interior Lighting	\$0	\$0	\$0	\$41,000	\$41,000	\$0	\$0	\$0	\$0	\$0	\$82,000
Solar Thermal Systems	\$0	\$0	\$14,000	\$10,500	\$10,500	\$0	\$0	\$0	\$0	\$0	\$35,000
Existing Building Commissioning	\$80,000	\$0	\$0	\$0	\$0	\$80,000	\$0	\$0	\$0	\$0	\$160,000
Electric Vehicles & Infrastructure	\$0	\$27,864	\$27,864	\$0	\$0	\$0	\$0	\$0	\$0	\$12,500	\$43,229
Increase Fuel Economy	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Indoor Water Fixtures and Fittings Efficiency	\$0	\$10,000	\$12,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$22,000
HVAC controls	\$75,000	\$86,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$161,000
Right Size Fleet	\$32,513	\$32,513	\$32,513	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$97,539
Expand Reuse Water Projects	\$88,000	\$443,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$531,000
Expanded Service Hours Work Week	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Irrigation Efficiency	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$0	\$0	\$0	\$0	\$0	\$75,000
Increase Diversion of Residential Waste	\$0	\$550,000	\$550,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$3,200,000
Green Purchasing Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Composting	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,000
Bikeshare	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Build out Bicycle and Pedestrian Infrastructure	\$0	\$10,000	\$170,000	\$280,000	\$270,000	\$0	\$0	\$0	\$0	\$0	\$730,000
Develop a Vulnerability/Adaptation Assessment	\$0	\$86,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$86,000
Dune Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Low Impact Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Integrate Sustainability into Employee Training & Increase Employee Participation	\$0	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$31,500
Communications Plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Develop Green Event Policies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Management System	\$50,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$77,000
Revolving Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Complete a GHG Inventory and Set Reduction Targets	\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
STAR Communities Certification	\$0	\$4,000	\$1,000	\$1,000	\$1,000	\$1,000	\$4,000	\$1,000	\$1,000	\$1,000	\$15,000
Total	\$339,820	\$1,345,185	\$828,185	\$654,000	\$644,000	\$387,500	\$310,500	\$307,500	\$307,500	\$295,000	\$5,419,189

ANNUAL INVESTMENT BUDGET*



**Year 2-4 may change depending on final decision regarding monetizing the solid waste franchise*

SCHEDULE (Part 1 of 2)



SCHEDULE (Part 2 of 2)

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Bikeshare										
Build-out Bicycle and Pedestrian Infrastructure										
Develop a Vulnerability / Adaptation Assessment										
Dune Protection Plan										
Low Impact Development Standards										
Integrate Sustainability into Employee Training & Increase Employee Participation										
Communications Plan										
Develop Green Event Policies										
Utility Management System										
Revolving Fund										
Complete a GHG Inventory and Set Reduction Targets										
STAR Communities Certification										

IMPLEMENTATION

« Management

- Key Performance Indicators
- Sustainability Division
- Sustainability Committee
- Sustainability Advisory Board
- Integration into Strategic Plan
- Integration in the RCAP
- Periodic Reporting

« Policy

- Comprehensive Plan
- Code of Ordinances



Questions and Policy Direction



1
2
3
4 **RESOLUTION NO. 2017 - 23**
5

6 **A RESOLUTION OF THE MAYOR AND CITY COMMISSION OF**
7 **THE CITY OF HALLANDALE BEACH, FLORIDA, AWARDED**
8 **RFP #FY 2015-2016-024, DEVELOPMENT OF A**
9 **SUSTAINABILITY ACTION PLAN TO THE HIGHEST RANKED**
10 **FIRM, REYNOLDS, SMITH, AND HILLS, INC., FOR AN AMOUNT**
11 **NOT TO EXCEED SEVENTY THOUSAND (\$70,000.00)**
12 **DOLLARS; AUTHORIZING THE CITY MANAGER AND CITY**
13 **ATTORNEY TO NEGOTIATE AND EXECUTE AN AGREEMENT**
14 **TO EFFECTUATE THE PROJECT; AND PROVIDING AN**
15 **EFFECTIVE DATE.**
16
17

18 **WHEREAS**, pursuant to Chapter 23, Section 23-4, Competitive Bidding Required, all
19 purchases of and contracts for equipment, supplies and contractual services, when the estimated
20 cost shall exceed \$50,000.00 shall be based on competitive bids. Furthermore, pursuant to
21 Chapter 23, Section 23-6 Award of Contract, the City Manager, shall have the authority to
22 recommend to the City Commission award of contracts; and
23

24 **WHEREAS**, the City hired a Green Initiatives Coordinator in order to bolster its
25 sustainability efforts; and
26

27 **WHEREAS**, currently, the City primarily focuses its efforts upon water conservation, but
28 the City Administration recommends that the program scope be expanded in order to achieve
29 internal and external sustainability; and
30

31 **WHEREAS**, in order to achieve internal sustainability, efforts within the City must include
32 all departments if the City desires to reduce its environmental impact and prepare for a resilient
33 future; and
34

35 **WHEREAS**, the City Administration recommends hiring a highly qualified, experienced
36 firm to develop a cohesive, logical, impactful and cost-effective five (5) year Sustainability Action
37 Plan that will lay the framework for the future of sustainability in the City; and
38
39
40
41

42
43 **WHEREAS**, on September 6, 2016, the City released the Request for Proposal (RFP)
44 #FY2015-2016-024, Development of a Sustainability Action Plan; and
45

46 **WHEREAS**, the RFP notice was sent to two hundred eighty four (284) vendors from the
47 City's vendor list, and was advertised in the Hallandale Beach Chamber of Commerce website,
48 as well as the Miami Minority Business Development Agency Business Center, the U.S. Small
49 Business Administration, and the Broward County Community Relations and Outreach Section
50 Office of Economic and Small Business Development; and
51

52 **WHEREAS**, on September 14, 2016, a mandatory pre-proposal meeting took place. Four
53 (4) prospective bidders attended the meeting; and
54

55 **WHEREAS**, the deadline for responses from proposers was October 14, 2016. Two (2)
56 proposals were received. After oral presentations from the two (2) responsive firms, the evaluation
57 committee met on November 21, 2016, and concluded that Reynolds, Smith and Hills was best
58 suited for the award of the contract due to its proven track record of achieving tangible
59 sustainability benefits for its clients; and
60

61 **WHEREAS**, the City Administration recommends that the City Commission award RFP
62 FY #2015-2016-024, Development of a Sustainability Action Plan, to the highest ranked firm
63 Reynolds, Smith and Hills, Inc. for an amount not to exceed seventy thousand (\$70,000.00)
64 dollars; authorizing the City Manager and City Attorney to negotiate and execute an agreement
65 with Reynolds, Smith and Hills, Inc.; and
66

67 **WHEREAS**, the Mayor and City Commission have determined that the City
68 Administration's recommendations are in the best interest of the City and its residents.
69

70 **NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COMMISSION OF**
71 **THE CITY OF HALLANDALE BEACH, FLORIDA:**
72

73 **SECTION 1. City Commission Action.** The Mayor and City Commission hereby award
74 RFP FY #2015-2016-024, Development of a Sustainability Action Plan to the highest ranked firm,
75 Reynolds, Smith and Hills, Inc.
76
77

SECTION 2. City Manager and City Attorney Authorization. The Mayor and City Commission hereby authorize the City Manager and City Attorney to negotiate and execute an agreement with Reynolds, Smith and Hills, Inc. for an amount not to exceed seventy thousand (\$70,000.00) dollars. The City Manager is authorized to execute all related documents to effectuate this project.

SECTION 3. Effective Date. This Resolution shall take effect immediately upon its passage and adoption.

APPROVED AND ADOPTED on 1st day of March, 2017.


JOY F. COOPER
MAYOR

SPONSORED BY: CITY ADMINISTRATION

ATTEST:


MARIO BATAILLE, CMC
CITY CLERK

APPROVED AS TO LEGAL SUFFICIENCY
FORM


JENNIFER MERIINO
CITY ATTORNEY

VOTE	
AYE/NAY	
Mayor Cooper	✓/___
Vice Mayor London	✓/___
Comm. Lazarow	✓/___
Comm. Sanders	✓/___
Comm. Taub	___/ Absent

*CITY OF HALLANDALE BEACH
SUSTAINABILITY ACTION PLAN
AGREEMENT
EXHIBIT 1*

BACKGROUND

INTRODUCTION

The City of Hallandale Beach is a vibrant coastal community located in the southeast corner of Broward County on the Atlantic Ocean. The City encompasses 4.4 square miles and has a population of 38,273 residents. The City demographics continue to change as younger families move to Hallandale Beach for its location and quality of life attributes. Tourism plays an important role in the City's economy, as the population during the peak winter season increases to 50,000 within the City. Home to 11 state of the art parks, including two beach parks and two gaming venues, the City hosts visitors year round.

Prior to hiring a Green Initiatives Coordinator ("GIC") during the summer of 2015, the City of Hallandale Beach's Green Initiatives Program historically focused upon water conservation. The GIC expanded the scope of the Program to include: energy conservation, waste reduction, public education via workshops and the quarterly Green Initiatives Newsletter, internal training programs, a sustainability website, Green Initiatives branding and long-range planning.

Many of the program areas included in this expanded scope are now entering the early implementation phase. The long-term success of sustainability in the City will in large part be due to the Sustainability Action Plan that will be developed as is described in this Scope of Work.

This scope of work will lead to the creation of a cutting edge comprehensive five (5) year Sustainability Action Plan through the preparation of innovative strategies, policies, and tools aimed at creating sustainable initiatives, reducing waste generation, increasing energy and water efficiency, educating the community, promoting resource conservation, developing climate resiliency strategies, and reducing greenhouse gas (GHG) emissions city wide. The City has selected RS&H in order to lead the SAP development process, as a result of RFP #FY2015-2016-024.

The primary point of contact for RS&H, Inc. ("The Consultant") will be the GIC. The GIC will facilitate the Consultant's communication with the City Manager, the City Commission, other representatives of City departments, community advocacy groups, volunteers from the community, and utilities providers to complete this scope of work.

PURPOSE

The SAP will serve as the foundation for guiding the City's efforts to meet its sustainability objectives and provide a set of tangible documents that can be used to:

1. Highlight the City's sustainability initiatives,
2. Demonstrate the City's commitment to sustainability,
3. Support funding requests,
4. Educate and inform the community, and
5. Create a measurable set of goals against which progress can be established.

The primary project objectives are to:

1. Provide a 5-year blueprint for public and private sector decision-making that tangibly and measurably advances the City in its pursuit of holistic sustainability and quality of life, and
2. Create a Sustainability Action Plan that will be a collective list of a vision statement, goals, objectives and incrementally building policies and initiatives and an implementation plan based on a 5-year planning and implementation time horizon.

PROJECT COMPONENTS

1. Project Management

Meet (may be via phone/email) with the City's project team as often as needed to coordinate data needs, access staff expertise, and ensure full understanding and agreement on scope specifications, including desired deliverable formats. Conduct meetings/presentations as detailed in the below tasks with City Commission, City administration, City staff, and community stakeholders (two (2) meetings, one (1) in the East section of the City and one (1) in the West).

2. Data collection, existing conditions analysis, trend analysis

- a) Comprehensive assessment of energy use for all City owned facilities and/or operations
- b) Comprehensive water consumption assessment for all City owned facilities and/or operations
- c) Comprehensive waste production and recycling assessment for all City owned facilities
- d) A fuel consumption assessment of the City's fleet, including Community Bus system
- e) An inventory of areas in the City vulnerable to sea level rise and impacts of climate change

Furthermore, the Consultant will engage and collect information from pertinent projects being completed by other consultants working under contract with the City of Hallandale Beach (Ex: Kessler Consulting Inc. and Solid Waste System Strategic Plan). The Consultant will also review and become familiar with existing City planning documents in order to ensure consistency and identify opportunities for integration (Ex: Strategic Plan, Mobility Plan, Comprehensive Plan) as well as relevant county and regional documents (Ex: Southeast Florida Regional Climate Change Compact's Regional Climate Action Plan).

The Consultant will also review relevant aspects of the City's Code of Ordinances as it relates to sustainability (Ex: Green Building Code) in order to recommend improvements in terms of content, enforceability and efficiency.

Engage Citizens and Businesses

Outline steps to build additional stakeholder support via coordination and collaboration with City staff/officials, participating agencies and the public throughout the project to ensure support and acceptance of preferred alternatives and policy documents by the public, City Commission and other reviewing agencies. Duties will include coordination with county and regional partners as required to acquire available data, identify best practices and contribute to citywide initiatives. Two (2) public meetings shall be held in Hallandale Beach, one in the East section of the City and one in the West. The

GIC will organize these meetings, including meeting logistics and the Consultant will provide expertise in facilitation and content dissemination. City facilities may be used if available.

Sustainability Action Plan

Develop internal and external strategies relative to a SAP that will be developed and prioritized by the City project team and via stakeholder engagement and presented to the City Commission. Subject areas include:

- a. A business case for renewable power generation, energy efficiency and energy conservation that makes economic sense and is realistically financeable.
- b. Energy and resource efficient land use patterns and redevelopment policies, including green building and low impact development strategies.
- c. Water conservation, including alternative water sources (rainwater harvesting, condensate collection, etc.).
- d. Landscaping (i.e. irrigation, native/drought resistant plants, maintenance practices, pesticides/fertilizers, etc.).
- e. Transportation measures to reduce emissions associated with vehicle miles traveled, including transportation demand management, increased street and mode connectivity, complete streets, and multimodal mobility planning that places emphasis on public transportation systems. Strategies related to this focus area should be associated with and function within the City's recently completed Complete Streets Basis of Design Report and Mobility Study
- f. Housing, including energy efficient design and construction of new housing, and use of renewable resources consistent with Florida Building Construction Standards.
- g. Environmentally responsible materials/waste reduction and recycling within the community and City government, with a focus on employing principles related to Sustainable Materials Management.
- h. Green purchasing and cleaning products.
- i. Natural resources conservation that considers green space access, tree canopy, and habitat preservation.
- j. Locally- based, sustainable food production to enhance economic, environmental and social health in the community. This focus area should be associated with and function within the City's Community Garden.
- k. Employee education and awareness.
- l. Future opportunities for community education and outreach.
- m. External funding to implement SAP strategies and capital improvements.
- n. Planning for climate resiliency that will allow the City to plan for climate threats, assess vulnerability and risks, investigate adaptation/mitigation options and prioritize and take action. Consultant will utilize information from recently completed Resilience Dialogues (White House Office of Science and Technology Policy program) to help inform SAP.
- o. Qualitative assessment of relative contribution of focus areas to the City and Community's greenhouse gas emissions

These subject areas will be categorized into the following Focus Areas:

1. Resource Conservation and Efficiency
2. Materials Minimization and Recycling (with a focus on promoting Sustainable Materials Management principles)
3. Land Use and Transportation
4. Natural Resources and Resiliency
5. Education and Outreach
6. Funding and Evaluation

SCOPE OF SERVICES

The Consultant will assist the City with building on and moving forward with what has already been accomplished and established as sustainability initiatives. The Consultant's primary point of contact will be the GIC. The GIC will facilitate communication with the City Manager, City Commission, other representatives of City departments, volunteers from the community, other governmental agencies, members of the business community and utilities providers to complete the scope of work. The Consultant will assist the City in creating a package of strategies to meet the established goals and objectives in each of the six (6) focus areas. The Consultant will analyze and prioritize initiatives that effectively and efficiently meet the overall purpose of the SAP. These prioritized actions shall be linked to a yearly cost to the City (and if applicable, a yearly cost to non-city entities) per project, along with estimated returns on investment and staff resources to be dedicated.

The Consultant should possess a comprehensive knowledge of best practices and have the technical means to develop the requisite metrics for measuring and reporting performance of the strategies (environmental and financial savings) that result from implementation of the plan.

CORE SERVICES

Development of the SAP will involve the following Core Services:

1. Collaboration with City staff and stakeholders,
2. Creating preliminary sustainable policies, initiatives and strategies,
3. Providing a detailed implementation strategy and timeline,
4. Public meeting presentations and input solicitation,
5. Developing a process to quantitatively measure performance and yearly progress and an outreach strategy to convey this information,
6. Developing a finalized Sustainability Action Plan, Executive Summary and concise public outreach summary, specifically suited to meet the needs of the City of Hallandale Beach for consideration by the City Commission.,
7. Develop graphic, website and social media content that fits within the City's overall brand. Final Action Plan documents should contain features designed to engage community members and may be disbursed via all city communication channels. This capability will be created in conjunction with the City's Chief Information Officer and GIC.

TASKS

Project tasks associated with Core Services are as follows:

Task 1: Kick-Off Meeting, Ongoing City Coordination and Capacity Building

- a) Kick-Off Meeting within first month of contract initiation. The kick-off meeting will be attended by the Consultant, GIC, staff from the City Manager's Office, Department Directors and members of the Interdepartmental Project Team. The Kick-Off Meeting will identify key sustainability issues to be addressed in the SAP, review available supporting data and information, review past, current and ongoing sustainability planning initiatives/projects and establish protocols for communication and shared responsibilities, including a discussion to identify stakeholder groups, and community participants as well as appropriate communication tools and strategies. Key staff that will provide specific expertise and insight into the various focus areas will be identified. Final report format and presentation format will also be discussed. The Consultant will prepare an agenda for and facilitate the Kick-Off Meeting. Directly after the Notice to Proceed and prior to the Kick-Off Meeting, the Consultant will prepare a comprehensive data request for the defined focus areas (Table 1 below). Data will be requested for 3 consecutive years, ending with the most recent 12 month period available. Thirty days (30) will be provided for the City to respond to the data request after the conclusion of the Kick-Off Meeting.
- b) Meetings with GIC, project team and staff. Following the Kick-off meeting, the Consultant will facilitate a discussion and interview members of an Interdepartmental Project Team, including the GIC, with the purpose of preliminarily identifying sustainability barriers and opportunities, including potential projects.

These meetings will clarify roles and responsibilities of individuals relative to the project focus areas. Before the meetings, City staff will identify the departments and associated personnel that can support initiatives in each of the focus areas. The Consultant will develop an agenda for staff meetings, along with focus area specific data requests (Task 1a above) that will be distributed to team members prior to the Kick-Off Meeting and thus, prior to team interviews.

The Consultant and GIC will also meet with each member of the City Commission separately in order to identify their goals for the SAP. If members of the Commission are not able to meet in person on the designated day, which may be separate from the above referenced Interdepartmental Project Team meetings, the Consultant will be available for individual teleconference calls with the GIC and Commission members.

- c) Site assessment. Following meetings (Task 1a and b), the Consultants will conduct a site assessment of the City's significant facilities and infrastructure including: utility infrastructure, parks, fire stations, the Public Works compound and water treatment plant, and the City Hall compound. The Consultant will provide a list of goals, outcomes and questions to the GIC for each stop included in the site assessment prior to the walkthrough in order to facilitate a meaningful and efficient dialogue. The GIC will schedule the assessment to occur the day following the Kick-Off and Interdepartmental Project Team meetings.
- d) Progress reporting. Minimum of at least bi-weekly calls with Project Manager and written monthly progress briefing to accompany invoice using a "stoplight" format, with descriptions of barriers to progress as needed.
- e) Final presentation of the SAP to the City Commission
- f) Coordination and communication with sub-consultant, Dewberry Consultants, as necessary. Dewberry Consultants will offer expertise regarding climate vulnerability and adaptation assessment as necessary.

Task 2: Communications Strategy

- a) Brainstorming Session/s on Communications Strategy via conference call/s in conjunction with GIC and City Chief Information Officer
- b) Communications Strategy including approach to branding, web and Public Outreach Strategies will be developed by Consultant with the objective of increasing transparency and awareness within City government operations and the city as a whole. The key messages and target audiences will be identified as part of the development of the SAP.
- c) Branding and digital content based on Tasks 2a and 2b above. Media formats to be identified will include web pages, social media posts, short video clips, press releases, articles and audio content. GIC will be responsible for uploading documents to web. The Consultant will develop outreach material for the Public Workshops and the GIC will distribute the information via any of the City communication channels.

Task 3: Baseline Assessment/Gap Assessment

a. Identification of Data Sources and Data Needs (Gap Analysis).

RS&H will issue a data request to the City based on the following focus areas after receiving the Notice to Proceed and prior to the Kick-Off Meeting. The City will have thirty (30) days to respond to the data request after the conclusion of the Kick-Off Meeting.

The following table provides a breakdown of the Focus Areas as well as data needed for each:

TABLE 1: FOCUS AREA AND PRELIMINARY DATA NEEDS

Focus Area	Data Needed Pertaining To:
Resource Conservation and Efficiency	Energy Use Fuel Use Water Use Alternative Water Use Green Purchasing Green Cleaning Products Low Impact Design
Materials Minimization and Recycling	Waste Generation Waste Diversion Waste Reduction Programs Waste Repurposing, Recycling and Recovery
Land Use and Transportation	Natural Area Preservation Open Spaces, Parks and Recreation Land Use Regulation Green Building Code Development and Redevelopment Transportation Patterns
Natural Resources and Resiliency	Water Use Community Rating System (FEMA) Historically Vulnerable Areas (Flooding and Shoreline Erosion) Storm Surge and Evacuation Storm Event and SLR Projections Infrastructure and Natural Resource Resiliency Status
Education and Outreach	Audience Message Content Media Tools
Funding and Evaluation	

The GIC will serve as a single point of contact responsible for collecting all requested data and forwarding it to the Consultant's Project Manager, Ben Moore. The Consultant will prepare written data requests for information held by external organizations, such as Florida Power and Light, waste services vendors and others, to be submitted by the City on its letterhead. The Consultant prefers that all data will be provided as requested in a fully and directly editable format compatible with common spreadsheet and database tools such as Microsoft Excel and Access. However, the City will provide information in the format that is available.

The project timeline is contingent on the Consultant receiving necessary data from the City within a reasonable period of thirty (30) days from the Kick-Off Meeting. The Consultant will follow-up with the

GIC regularly to obtain the needed information after which the data collection period will end. After the close of the data collection period, the Consultant will provide a Data Gap Analysis Memorandum. The memo will document the processes, tools and analyses the City currently uses to generate and track its sustainability metrics. The Consultant will identify key metrics not currently collected and any barriers that prevent collection. This information will be used to recommend a data collection, tracking and reporting framework for the City.

b. Baseline Assessment

The Consultant will assess collected data to characterize existing conditions, including existing sustainability and climate initiatives. The assessment will include quantitative and qualitative data for the City's focus areas that is directly or indirectly under the City's operational control. The Consultant prefers that data will be available at the end-use level (e.g. by building, by vehicle), relevant detailed end use characteristics will also be available (e.g. building floor area, vehicle make and model, etc.), and that at least three years of complete data records will be available. However, the City will provide information in the format that is available.

Data will be summarized in charts and graphs accompanied by brief explanatory text that at minimum (subject to availability of data) defines historical performance; cross-tabulates performance by operationally meaningful units; normalizes performance to facilitate comparisons between and within operational boundaries.

c. Benchmarking and Analysis

The consultant will benchmark baseline performance against three peer municipalities identified in collaboration with the GIC. The Consultant will analyze benchmarking results to develop recommendations for sustainability goals, programs, projects and policies.

d. Integration of existing initiatives into STAR Community rating System's Self-Assessment Checklist and Tool

The STAR Community Rating System ("STAR") is the nation's first voluntary, self-reporting framework for evaluating, quantifying, and improving the livability and sustainability of U.S. communities. The framework includes social, economic and environmental dimensions of community. In collaboration with the GIC, the Consultant shall use STAR, or other appropriate method, as the method to determine an initial "rating" to establish a baseline that the City shall improve upon. The Consultant shall collect and input data for the focus areas identified above into the STAR Self-Assessment Checklist. The GIC, facilitated by guidance from the Consultant, shall address the remaining components of STAR.

STAR is an online system that gathers, organizes, analyzes, and presents information required to meet sustainability goals. It is premised on a framework of sustainability goals, objectives and evaluation measures. Local leaders can set goals and measure progress across sustainability themes using the evaluation measures included in the Rating System. A community can address all or some of the Goals and Objectives and determine if there are additional outcomes to measure.

Within the Goals and Objectives specific performance measures are included such as regulatory changes, land acquisitions, new policies or plans created or something as specific as increasing access to transit.

The Consultant shall include a STAR subscription into this scope of work, as necessary to complete the tasks described herein, and will use the process as a performance management tool for the SAP. The Team is open to other methodologies for performance monitoring and tracking, but recommends consideration of STAR because of the support the organization provides and the uniformity of the rating approach.

Task 4: Solutions Memo

The consultant will prepare a solutions memorandum detailing the results of Tasks 1, 2 and 3, supplemented by its experience and expertise identifying, planning, designing and ensuring the quality of sustainability projects. The memo will include a catalogue of potential projects corresponding to the City's focus areas. For each project, the memo will define the project intent, scope, life, notional yearly cost/benefit per project, and guiding assumptions.

Based on the potential of these projects, the Consultant will provide preliminary recommendations on goals, funding, education and outreach and monitoring and continual improvement.

The memo will be provided to the City in an editable PDF format and the City will have 5 calendar days to provide edits to the Consultant.

Task 5.0: Strategy Development, Performance and Monitoring

a. Collaborative Workshop

The GIC, with guidance from the Consultant, shall organize and provide logistics for a workshop attended by the City's Interdepartmental Project Team. The Consultant will facilitate the Workshop. The Workshop will take place during 2 consecutive half day sessions. The Objectives of this workshop shall include:

- Reviewing, calibrating and building on the results of the Solutions Memo,
- Defining the City's sustainability vision via a series of participatory self-assessment techniques (strengths, weaknesses, opportunities, threats analysis etc.),
- Establishing goals for each focus area using backcasting techniques and identify strategies for reaching goals,
- Refining a portfolio of potential sustainability initiatives for each focus area, including selection of projects that will be assessed in further detail in the SAP.

The workshop will utilize facilitation techniques to elicit full participation from the City Interdepartmental Project Team and incorporate their experience and expertise into the SAP to the greatest extent possible. During the workshop, the Consultant shall provide the Team with hands on experience with the processes and tools used to develop a project-driven sustainability plan so that the City's capacity for managing a system of continual sustainability improvement is developed.

b. Public Workshops- East and West section of City (2 total)

Public involvement is key to the successful creation and implementation of the SAP.

The Consultant will facilitate two public workshops following the Collaborative Workshop. The GIC will take the lead in organizing these meetings. As described in Task 2, the Consultant will create outreach flyers for the workshops, which the GIC will distribute in hard copy and electronic formats. During the workshops, attendees shall be briefed on the Solutions Memo as well as the City's preliminary sustainability vision, project portfolio and goals. The Consultant shall use participatory techniques to obtain feedback on the following elements:

- Obtaining input on the project solutions presented in the Solutions memorandum and those developed during the Collaborative Workshop with staff.
- Identifying additional projects that they would like considered for the Sustainability Action Plan.
- Obtaining input on the City's Sustainability vision and associated goals to achieve that vision.

The Workshop process should be participatory and include the opportunity for feedback, input and comments from key stakeholders in the community. The structure and function of the Community Workshop will be mirrored in an engaging website/survey designed to solicit input from stakeholders unable to attend the workshop.

c. Sustainability Management System

The Consultant will work with the GIC to build on the Collaborative Workshop by establishing a sustainability management system at the City. Together, they shall establish the system by forming working groups based on the City's focus areas. Led by department heads or their assignees (e.g. members of the Interdepartmental Project Team that participate in Task 5a above), these groups will work with the GIC and the Consultant to learn more about how sustainability performance is baselined and benchmarked, how best management practices are identified, how BMPs are adapted to Hallandale Beach, how projects are developed and implemented and how projects are managed and their results tracked. Members of the team will be tasked with developing a suite of strategies for attaining the goals outlined in each of the focus areas.

This will occur through a series of weekly, teleconference meetings over the course of a month, facilitated by the Consultant's analytical and technical expertise. Teleconference calls will discuss focus-area specific solutions and focus on developing a suite of strategies for attaining focus area goals. During meetings, teams will review baseline data, scan BMPs and begin to develop or refine projects. The consultant will help teams identify barriers and solutions, quantify benefit and costs, review funding options and develop implementation strategies. Over time, projects will be readied for incorporation into both the SAP and the City's existing management processes.

Task 6.0: Implementation Plan, Milestones and Schedule

The SAP will focus on summarizing and communicating the City's sustainability objectives. The implementation strategy will serve as an Appendix to the SAP and focus on ensuring that its goals are accomplished in a transparent and efficient manner. The SAP's priority projects will be organized into a portfolio of solutions, prioritized by financial performance in a summary table with associated graphics. Furthermore, a one to two page "report card" will be prepared for each project. This report card will summarize the project name and objective, project management roles and responsibilities, contribution to

goals, costs and benefits, budget requirements and funding sources and schedule. An annual sustainability operating budget will be developed based on these projects.

Accompanying this 5-year implementation plan will be a discussion of barriers and recommended policy enhancements necessary to overcome them. Consultant will also recommend how the SAP may be integrated within other City plans, such as the Strategic Plan and Comprehensive Plan.

The implementation plan will also establish metrics for tracking and reporting on sustainability projects. The Consultant will work with the City's IT Department, as part of task 5c, in order to tailor a tracking and reporting system to the City's needs. In short the implementation plan will:

- a) Review Comprehensive Plan, Strategic Plan, Basis Of Design Report (BODR), Solid Waste System Strategic Plan, Parks Master Plan and relevant Code of Ordinances sections, as well as other relevant documents for additional consistency
- b) Create recommendations and actions for implementation (with projects, programs, initiatives and milestones)
- c) Review funding opportunities and constraints
- d) Prioritize recommendations as short, medium and long term
- e) Develop an implementation schedule to meet goals (The program shall include an annual score/report card for Plan evaluation, monitoring, and reporting progress to the public and regulating entities)
- f) Identify obstacles to reaching goals and strategies to remove obstacles.

Implementation of the SAP shall consider existing planning and policy making processes and make recommendations for improvements.

Task 7.0: Final Plan Development

Following coordination with the Interdepartmental Project Team, via the Collaborative Workshop and Sustainability Management System, and the Public Workshops the Consultant shall incorporate the resulting prioritized projects and initiatives along with previous deliverables into a draft SAP. This draft SAP will prioritize projects and initiatives with the potential to deliver substantial returns with low initial investments. This approach is designed to create an enduring funding mechanism to support further sustainability efforts in City operations by capturing eco-efficiencies related to energy, fuel, water and waste. Five high priority projects will be identified and a life cycle assessment will be conducted for these projects. Cost estimates, cost-avoidance, labor savings, and revenue will be determined for these projects. Social and environmental benefits will also be characterized, either quantitatively or qualitatively (resource reduction, greenhouse gas emission abatement, air quality improvement, public health improvement etc.).

The draft SAP will include an Executive Summary, which will provide a high level overview of the City's operations and facilities baseline, benchmarking findings, overall sustainability vision and goals, as well as key indicators and targets. It will also include the results of the solutions memo, a project-driven action plan centered upon the Focus Areas and building upon staff and public input. Furthermore regardless of whether the City undertakes the full Vulnerability Assessment option, the SAP will address projected

impacts of climate change on facilities/infrastructure and opportunities to proactively plan for increased efficiency and resiliency. The SAP will lay out cost estimates and associated returns for each project/initiative. Short, medium and long term sustainability goals will be conveyed for each focus area. The project intent, scope, notional cost/benefit comparison, contribution toward goals, and guiding principles will be identified.

The benefits of these projects compared to a business as usual approach will be highlighted. The SAP will also contain a discussion of the STAR Rating Assessment, Implementation Strategy, Project Funding Analysis and Marketing and Communications Plan. An outline of the deliverables associated with the SAP can be seen below:

- a) First Draft of SAP Outline (City comment period of 10 calendar days)
- b) Second Draft of SAP Outline (City comment period of 5 calendar days)
- c) Format of SAP
- d) Graphic design of Plan
- e) First Draft of Sustainability Action Plan (City comment period of 20 calendar days)
- f) Second Draft of Sustainability Action Plan (City comment period of 15 calendar days)
- g) Integrate Climate Vulnerability Modeling Results, if authorized at the City's option, into Sustainability Action Plan
- h) Final SAP
- i) Presentation of SAP to the City Commission
- j) With the assistance of the GIC, placement of SAP (and supporting documents) on website

All versions of the SAP will be provided to the City by the Consultant in an editable, PDF format.

Final project deliverables will include:

1. A comprehensive 5-year Sustainability Action Plan detailing short, medium and long range projects and initiatives;
2. An executive summary condensing the information in the SAP;
3. A concise public information document that will serve to convey information included in the SAP in an easy to understand manner and,
4. Design and content assistance for website content to convey the information contained in the 3 previously listed items. The GIC will be responsible for uploading content to the City's website.

The Consultant will be responsible for making any revisions as required by the City, prior to acceptance of the SAP. At the City's discretion, ten (10) bound, color copies of deliverables 1-3 will be provided along with an electronic copy in a Microsoft Office format. All deliverables become the property of the City and can be shared or used for presentation of informational purposes at the city's discretion.

PROJECT TIMELINE

The estimated project schedule is as follows:

Table 1: Project Schedule

Task	Estimated Duration	Estimated Calendar Days from NTP
Kick-Off Meeting and Staff Interviews	2 days	27
Data Collection	5 weeks	64
Baseline and Benchmark	12 weeks	127
Solutions Memo	3 weeks	148
Collaborative and Community Workshops	2 weeks	159
Goals and Projects	7 weeks	197
Funding, Communication and Monitoring	4 weeks	232
SAP and Implementation Strategy	4 weeks	232
City Commission Approves SAP	1 week	237

Task	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1	Kick-Off Meeting and Staff Interviews																																			
2	Data Collection																																			
3	Baseline & Benchmark																																			
4	Solutions Memo																																			
5	Collaborative and Community Workshops																																			
6	Goals and Projects																																			
7	Funding, Communication and Monitoring																																			
8	SAP and Implementation Strategy																																			
9	City Commission Approves SAP																																			

COST ESTIMATE

The scope of work for the core service tasks detailed in our proposed scope of work shall be completed for a lump sum fee of \$70,000. The hourly rate, hours and total cost by the tasks specified in the price sheet included in the RFP are as follows.

Table 1: Core Service Price Sheet

Task Number	Core Service Task	Hourly Rate	Number of Hours to Complete	Total Task Cost
1	Kick-Off Meeting, Ongoing Coordination and Capacity Building	\$115	95	\$10,900
2	Communications Strategy	\$115	40	\$5,000
3	Baseline Assessment / Gap Assessment	\$115	143	\$16,500
4	Solutions Memo	\$115	52	\$6,000
5	Strategy Development, Performance and Monitoring	\$115	164	\$18,900
6	Implementation Plan, Milestones and Schedule	\$115	65	\$7,500
7	Final Plan Development	\$115	45	\$5,200
Total (Items 1 – 7)		115	564	\$70,000

OPTIONAL SERVICES

GREENHOUSE GAS INVENTORY – SCOPE OF SERVICES

RS&H will provide a base year 2016 (or an alternative base year selected by Hallandale Beach) Local Government Operations (LGOP) and Community-wide inventory, performed according to ICLEI's Local Government Operations protocol version 1.1 and U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions V 1.1 (or most current at project commencement). The details of the project schedule shall be agreed on with the City prior to project commencement. RS&H recommends that the effort be scheduled concurrently with work on the City's Sustainability Action Plan to take advantage of synergies between the related efforts.

Task 1: Data Gathering

1.1 Kickoff Meeting

Within 10 days of receiving Notice to Proceed, RS&H will coordinate a Kick-off Meeting by teleconference to familiarize the City's Green Initiatives Coordinator (GIC) with the scope of work and schedule of deliverables. RS&H proposes to discuss sources and availability of data necessary for completing the Local Government Operations (LGOP) and Community inventories for calendar year 2016. During the meeting, RS&H will provide a preliminary data request for review and discussion.

RS&H assumes organizational boundaries and emissions sources for the LGOP Inventory will include, but not be limited to: water/wastewater treatment, fuel and electricity use of buildings and facilities, and vehicle fleet operations. For the Community Inventory, they will include, but not be limited to: community industrial, commercial and residential electricity, natural gas and fuel oil consumption, transportation, and solid-waste disposal.

RS&H will calculate community-wide transportation emissions as a function of vehicle miles travelled (VMT) within the study area by modeling roadway networks, congested speeds and associated VMT, using the South Florida Regional Planning Model. This approach simplifies data collections and improves accuracy of the community-wide transportation sector GHGE estimate. It can also be used to identify which roadway segments generate the greatest amount of GHGE.

1.2 Data Gathering

Within 10 days after the Kick-off meeting, RS&H will issue one internal and multiple external data requests. RS&H will coordinate with the GIC to obtain needed information from City Departments for the internal LGOP data request.

In addition, RS&H will provide data requests for external data providers for the Community Inventory, such as Florida Power and Light and major natural gas and fuel oil providers in the area. It will be the GIC's responsibility to issue the external data requests on City letterhead, however, RS&H can assist in follow-up to collect data from the external providers.

1.3 Data Gap Analysis Memo and Follow-up

The project timeline is contingent on RS&H receiving necessary data from providers within a reasonable period. The City will have thirty (30) days to respond to the data request. RS&H will provide limited follow-up with data providers to obtain the needed information, in accordance with the agreed project scope. After 30 days RS&H will provide a Data Gap Analysis Memorandum detailing data received as well as any missing or incomplete data.

After the City has had adequate time to review the memo, RS&H will conduct a Data Gap Analysis meeting by teleconference. The purpose of this meeting is to review outstanding data gaps with the City's project team and find solutions or workarounds to obtain the needed information. Following this meeting, RS&H will work with the GIC to obtain any outstanding data. In some cases, RS&H may be able to develop engineering estimates as a substitute for unobtainable data.

Task 2 Preliminary 2016 Greenhouse Gas Inventory and Memorandum

After receiving sufficient information from the City and Community data providers, RS&H will develop the LGOP and Community GHGE inventories. Within 90 business days of the Kick-Off Meeting, RS&H shall provide the City with a Preliminary GHGE Inventory and Forecast for review. Deliverables will include:

- A GHGE Inventory Excel-based template populated with inventory data and calculations; and
- Preliminary (Draft) GHGE Inventory Update Memorandum.

A web-based inventory using ICLEI's ClearPath software platform will also be provided.

The preliminary GHGE Inventory Memorandum will detail extensive documentation of methods, calculations, and data sources / contacts used to conduct the inventory. In addition the Memo will include the following:

- Executive summary of Inventory results by source and sector and discussion of results relative to the City's GHGE reduction goals;
- Summary graphics showing contribution of various emissions sources;
- Methodology section;
- Benchmarking section comparing Hallandale Beach's 2016 inventory to those of peer cities.

The Benchmarking section will provide a comparison of the City's Inventory with those of 3-5 peer cities (chosen based on ICLEI membership, availability of GHGE Inventory information, and similar characteristics to Hallandale Beach, i.e. population, climate zone, mix of

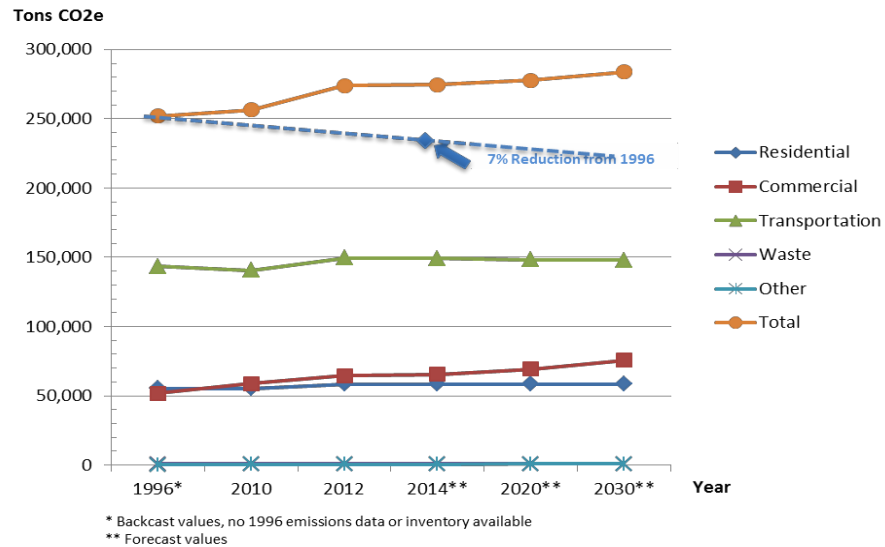


FIGURE 1: EXAMPLE GHGE FORECAST

industrial/commercial/residential land use, etc.). The exact number of peer cities and criteria used in the benchmarking process will be developed in agreement with the GIC. The Benchmarking section will provide comparisons normalized by population or other appropriate metrics, as well as a brief discussion of carbon reduction best management practices employed by the peer cities.

Task 3 Final 2014 Greenhouse Gas Inventory and Memorandum

Following a 2-week review period and after incorporating review comments from the City, RS&H will finalize the 2014 LGOP and Community-wide Inventory. RS&H will deliver final versions of the GHGE Inventory Excel Template and Update Memorandum discussed in Task 2 above. RS&H can also assist the City in submitting the Final inventory to ICLEI's online database.

Fee

The greenhouse gas scope of services will be provided for a lump sum fee of \$18,500

VULNERABILITY AND ADAPTATION PLANNING – SCOPE OF SERVICES

Vulnerability and adaptation planning would be coordinated by RS&H via its sub-consultant for this project, Dewberry, LLC (Dewberry). Dewberry brings 40 years of disaster preparedness and emergency planning to their expertise in assessing the effects of climate change on human and environmental systems.

RS&H would remain the single point of contact for the City, facilitating communications between staff and Dewberry to ensure that deliverables are provided on budget, on time and in a high quality manner.

Dewberry's services are presented in a menu format, providing the City with maximum flexibility with respect to its options for evaluating its exposure to climate change risks, as well as its capacity to prepare and respond to the challenges posed the community.

RS&H and Dewberry will work closely with the City to review the options described below and craft a scope and fee tailored to its objectives.

Introduction

Improved mapping, recognition, and informed flood risk management strategies are an essential element for Hallandale Beach's sustainability planning effort. We have prepared a menu of services that are complimentary and will further inform the primary sustainability plan. An initial cost estimate is provided along with each option based on past work and assumptions regarding the described services. We look forward to engaging on the menu items of interest to further refine scope and fee that best meets your needs.

Existing Information

We have reviewed mapping and vulnerability information available for Hallandale Beach to help inform proposed services. The existing information could be a starting point for analysis, but there are critical limitations identified below that should be improved or resolved in order to confidently support adaptation strategies. A short summary of our findings follow:

Broward County - City of Hallandale Beach Vulnerability to Sea Level Rise Assessment Report.

This report summarizes sea level rise (SLR) mapping and vulnerability performed in the City under the Broward County effort funded by FL DEP via a NOAA grant. The effort examined 2 future condition sea-level scenarios consisting of a 1 foot and 2 foot rise from present day condition. The base water datum is identified as "high tide" in the report which is assumed to be mean higher high water using the typical NOAA inundation evaluation model. Flood extents were delineated from a 50-foot resolution digital elevation model. Exposure of municipal infrastructure across 14 categories was evaluated for each of the two conditions. Some uncertainty is communicated with the mapping, represented by "possible" and "more likely" areas of inundation, which is not fully explained in the document but appears to represent potential error of the source water level and topographic data.

Observed Key Limitations:

- Focused solely on high tide inundation and does not address nuisance flooding or storm surge conditions.
- Utilizes a coarse DEM for mapping inundation extents (50 foot). Data sources are available with a 15 foot resolution.
- Utilizes 1 foot and 2 foot scenarios. In reference to the Unified Southeast Florida Sea Level Rise Projections, both occur in the 2060 time frame. A 0.5 foot scenario would provide for a representative scenario in the near-term (2030) that is better aligned with the municipal planning cycle.



FIGURE 2. EXAMPLE SLR INUNDATION MAPPING FOR A 2 FOOT SLR SCENARIO FROM THE BROWARD CO. EFFORT.

Other Studies/Information

An initial review of other existing publically available data sources for SLR vulnerability found data in the City from the [NOAA SLR Viewer](#) and [Climate Central](#). The NOAA viewer provides a similar depiction as available from the Broward Co. effort. Climate Central data is also available but again referenced to a high tidal datum and also has not been adequately cleaned to reflect hydro connectivity from open water. The NOAA data is available for download and use, whereas the Climate Central data is not readily available for additional end-use.

Task 1. Flood Hazard Mapping

Flood hazard extents and depth grids would be produced for a range of conditions including tidal, nuisance, as well as storm surge recurrence intervals of 10-year, 100-year and 500-year flood conditions. Data will be derived at a 15-foot horizontal resolution elevation model to add additional detail as compared to the existing Broward County analysis. Such conditions are selected from our experience in flood resilience planning and each is used for different awareness and planning and hazard mitigation purposes; however, flood conditions can be further refined in discussions with the City.

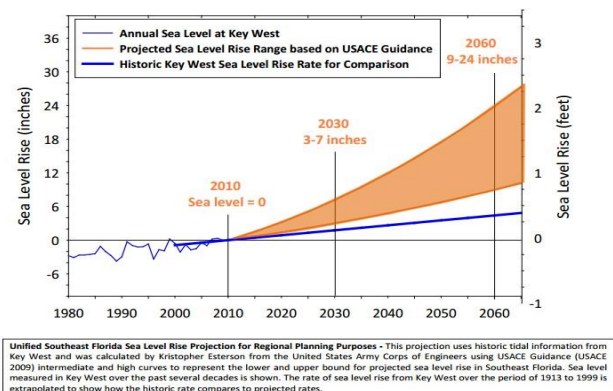


FIGURE 3. UNIFIED SOUTHEAST FL SLR SCENARIOS FOR 2030 AND 2060.

Each flood condition would be produced for today – the baseline condition, and then three SLR scenarios based on the SE Florida Climate Compact Unified SLR Scenarios. The three future condition scenarios would include 2030 (0.5 foot increase from today) and 2060 (1 foot and 2 foot increases from today to bound range). Although 0.5 foot mapping products are within the error of the base data, the relative change in flooding would be informative for near-term impacts. Additional scenarios could be added at the discretion of the City.

In addition to the mapping, we will provide information on the existing and projected future frequency of each event type.

Benefits:

- Full understanding of near and long-term flood extent and frequency changes
- Range of flood conditions to inform resilience strategies

Deliverables:

- Technical documentation
- Cartographic map depictions for each flood type
- Summaries of change in flood area and frequency per flood type
- Geospatial data, including flood elevation surfaces, flood extents, flood depth grids and base topography

Task 2. Flood Vulnerability/Loss Assessments

Assumption: Geospatial data of City assets is readily available and would be provided in an ESRI-compatible data format and used as-is.

Task 2.1: Flood Exposure Assessment

Option 1 would provide for a GIS-based flood exposure analysis that would determine the vulnerability of the data assets to each flood condition. Depth attribution would be included. Vulnerability would be summarized to identify the relative flood condition, timing and severity (using flood depth as a proxy) of the potential impact. A weighted scoring system, considering the timing and severity of impact will be applied to quickly identify the assets with the highest risk.

Benefits:

- Comprehensive vulnerability assessment across a range of flood conditions, with high-risk assets identified for priority hazard mitigation.

Deliverables:

- GIS layers of assets attributed with flood vulnerability to each condition
- Summary tables and short discussion of vulnerabilities, highlighting key at risk assets.
- Technical documentation



FIGURE 4. EXAMPLE MAPPING OF EXISTING AND FUTURE CONDITIONS FOR 10-YR RECURRENCE INTERVAL FLOODING.

Task 2.2: Flood Economic Loss Analysis

This option would include a FEMA Hazus depth-damage economic loss analysis for the City's building assets. The Hazus economic loss model would be applied to the Hazus default general building stock information for the City census block groups to estimate changes in economic loss from today's baseline to the near and long-term future conditions examined by the flood mapping analysis. Flood depth products developed in Task 1 would be directly leveraged for this analysis.

Benefits:

- Estimation of changes in economic flood loss by flood frequency, as well as annualized losses for each future condition.
- Economic loss information helps justify resilience expenditures and can be used in grant applications for hazard mitigation funding.

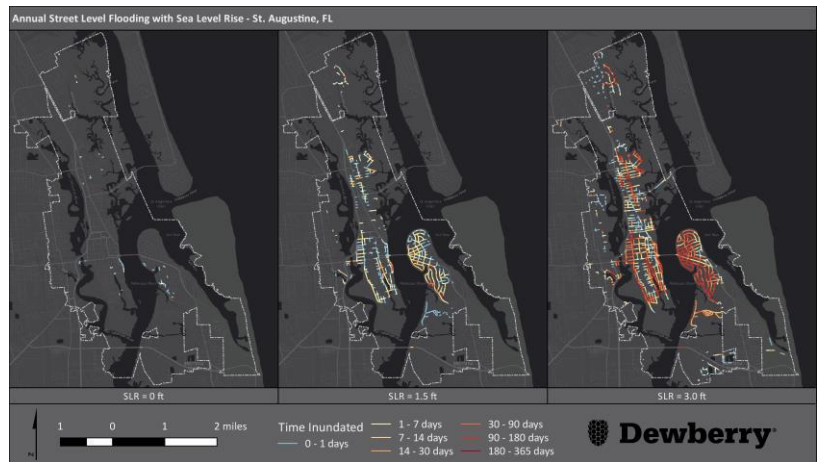


FIGURE 5. EXAMPLE CHANGES IN NUISANCE FLOOD FREQUENCY TO ROAD SEGMENTS PREPARED FOR ST. AUGUSTINE, FL.

Deliverables:

- Direct and indirect economic loss outputs for existing and future conditions, including loss by return period and annualized losses, as well as an assessment of the changes in loss values across the evaluation scenarios
- Summary of loss profile information, including demographic, building stock, and essential facilities loss estimations
- Technical documentation

Note: A structure specific analysis could be conducted depending on availability and quality of building footprint and tax assessor data. We would need to engage further on such data sources to provide an informed estimate. Benefits would be site-specific loss information. Other methods are also available and could be scoped based on further discussion.

Task 3. Qualitative Assessment of Groundwater Changes

This element would include a review of local hydrogeology studies to provide discussion on aquifer vulnerability to SLR, anticipated changes in the water table, and saltwater intrusion. Discussion will include anticipated community impacts of changes in groundwater hydrology induced by SLR and a changing climate (i.e. rainfall, recharge/discharge). Contingent on groundwater data availability, geospatial modeling of the coastal water table could be conducted to identify areas with especially shallow water-tables that have higher vulnerability to flooding.

Benefits:

- Understanding of how vulnerability of groundwater resources to inform adaptation strategies to ensure sustainability of water usage and understand saltwater intrusion

Deliverables:

- Narrative discussion of groundwater changes, along with documentation of data sources and assessment of impacts
- Geospatial products including data and existing and future water table maps and surficial aquifers, if selected

Note: Quantitative modeling of the groundwater is possible but dependent on availability and quality of existing model data from the U.S. Geological Survey.

Task 4. Future Precipitation Analysis

This task would provide site-specific changes in future heavy precipitation relevant to stormwater management and design. The effort would include a review of the existing NOAA Atlas 14 heavy rainfall recurrence statistics against provided existing stormwater design/management guidance. Estimate of future peak 24-hour rainfall would be completed for recurrence intervals up to 200-years for the two future time periods (2030, 2060). Estimates will be based on an ensemble of statistically downscaled precipitation data to encompass the range of model uncertainty. Future exceedance curves will be compared to the historical period and projected changes outside of the existing error range will be noted. Changes will be communicated in the context of the existing guidance.

Benefits:

- Informs sustainability of stormwater system in context of projected future conditions

Deliverable:

- Narrative providing summary of technical approach, findings and insights

Task 5. Projected Changes in Shoreline Recession

Historical shoreline change data will be used in conjunction with simple techniques to estimate changes in recession rates due to sea level rise.

Benefits:

- Understanding on how SLR may increase shoreline recession rates, decreasing beach width and recreational use and increase need for more frequent beach nourishment.

Deliverable:

- Estimated change in average recession rate for oceanfront beaches and qualitative assessment of potential impacts to recreation and nourishment intervals

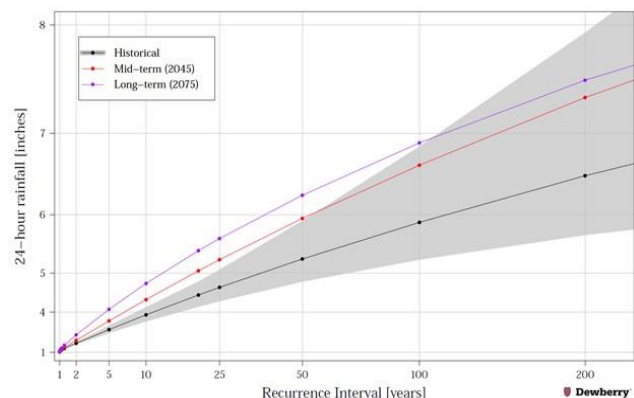


FIGURE 6. EXAMPLE FUTURE PRECIPITATION FREQUENCY CURVES DEVELOPED FOR CLEARWATER, FL.

Task 6. Resilience Strategy Development and Evaluation

Task 6.1 Initial Strategy Development

This task will entail a review of the vulnerability assessment and lead to identification of potential flood risk management strategies. Strategies will be developed based on noted vulnerabilities within the City, relevant to City infrastructure and further informed by the local hazard mitigation plan, ongoing sustainability plan and also through interviews with community officials and stakeholders. Strategies to consist of combination of policy, regulations, ordinances, as well as flood mitigation strategies including protection, relocation, elevation or hardening (flood and wind-proofing) of existing infrastructure – such strategies will be at a high level but specific to noted vulnerabilities of any specific infrastructure identified by the community or its stakeholders such as shelters, water-wastewater infrastructure, public safety facilities. Strategies will be organized into a short and long-term list. Text will also be developed to note areas of broader coordination that would be needed with Broward County and adjacent communities.

Benefits:

- Establishment of a “pathway” to flood resilience informed by existing and future conditions.

Deliverable:

- List of short- and long-term strategies that can be actioned on or further developed for implementation. Such strategies will complement the sustainability plan.

Task 6.2 Strategy Evaluation

This task will provide a collaborative review and scoring of the identified strategies with City stakeholder engagement. Our team will convene a workshop to discuss benefits and drawbacks of the individual strategies as well as feasibility with City stakeholders. This effort will provide some initial preferences and culling of the strategy list. Next, a collaborative evaluation of the preferred strategies across feasibility and impact metrics will be completed to score and objectively identify the favored strategies by apply our Excel based decision framework tool. Metrics will include consideration to technical, administrative, political, legal, fiscal, environmental, economic and societal factors. Favored strategies would be integrated into the sustainability plan for consideration for implementation.

Benefits:

- Facilitates stakeholder discussion to capture viewpoints on strategy integration in an objective and transparent framework

Deliverables:

- Two staff to attend and help organize and coordinate on site meeting, including, materials, facilitation, notes.
- Process documentation, list of preferred strategies, definition and overview of metrics and scoring process, completed scoring matrix

Assumption: City to provide meeting facility and assist in the identification of stakeholders and scheduling of meeting

Weighted Importance Factors and Scoring	Feasibility and Impact Factors													
	Feasibility Factors													
	Consistent w/ Goals & Policies	Technical			Administrative			Political			Legal		Fiscal	
		Access to Necessary Technical Tools	Storm Design Level of Protection	Complexity	Staffing	Maintenance	Complexity	Decision makers	Stakeholders	Complexity	Regulatory and Ordinance Compliance	Legal Challenge Potential	Cost	Cost-Effectiveness
High Score	Yes	Easy	High	Simple	Limited	Limited	Simple	Supportive	Supportive	Simple	Not Required	Unlikely	Affordable	High
Medium Score	Moderate	Moderate	Medium	Moderate	Moderate	Moderate	Moderate	Neutral	Neutral	Moderate	Possible	Possible	Moderate	Medium
Low Score	No	Limited	Low	Complex	Significant	Significant	Complex	Resistant	Resistant	Complex	Required	Expected	Prohibitive	Low
	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Weighted	5.0	3.0	3.0	3.0	1.0	1.5	1.5	2.0	2.0	2.0	1.0	2.0	3.0	2.0
Rating	Yes	Moderate	High	Moderate	Significant	Moderate	Moderate	Supportive	Neutral	Simple	Required	Unlikely	Moderate	High
Score	25.0	9.0	15.0	9.0	1.0	4.5	4.5	10.0	6.0	10.0	1.0	10.0	9.0	10.0

FIGURE 7.EXAMPLE CATEGORIES AND RATING ELEMENTS OF OUR STRATEGY EVALUATION TOOL. SCORES ARE TALLIED ACROSS MULTIPLE CATEGORIES AND ASSESSED AGAINST QUALITATIVE IMPACTS TO RANK FAVORABILITY INTO HIGH, MEDIUM AND LOW CATEGORIES.

Task 6.3 Infrastructure Specific Strategies

This task would extend the Strategy Evaluation task to include a site visit of vulnerable facilities to enable the development specific strategies that address. The site visit would use the hazard information, identify specific vulnerabilities and recommend operational or structural hazard mitigation strategies to improve resilience.

Benefits:

- Facilitates stakeholder discussion to capture viewpoints on strategy integration in an objective and transparent framework

Deliverables:

- Site visit to selected vulnerable facilities
- "Project Sheets" for each selected facility that describes vulnerabilities and specific resilience strategies.

Assumption: Specific design of structural solutions is not included

Task 6.4 Benefit Cost Assessment

This task would build on the preceding strategy elements and provide gross estimates of project costs and benefits and initial calculation of the benefit-cost ratio for up to 10 projects.

Benefits:

- Provides context for project cost and return on investment to support decision-making and further investment.
- Allows the City to better focus on potential funding sources

Deliverables:

- Up to ten individual project four-page "Project Sheets" that provide a review and estimate of gross project costs and benefits, as well as the benefit-cost ratio with clearly identified assumptions for the calculations.

Assumptions: Will provide a gross estimate of costs and benefits. A first-step for assessment and would not support funding programs such as the FEMA Hazard Mitigation Grant Program.

Note: Our team has had success in supporting benefit cost analysis for funding awards through grant programs to help clients fund projects. Support under this task could be tailored to specific projects and requirements to help meet those needs depending on client feedback and discussion.

Fees

Fees for vulnerability and adaptation services are provided in a menu format, as described above. RS&H and Dewberry anticipate working closely with the City to develop a scope and fee that best meets the City's needs.

Table 1: Vulnerability and Adaptation Planning Tasks and Costs*

Task	Description	Cost
1	Flood Hazard Mapping	\$11,000
2	Flood Vulnerability / Loss Analysis	-
2.1	Flood Exposure Assessment	\$6,600
2.2	Flood Economic Loss Assessment	\$5,400
3	Groundwater Assessment	\$2,750 / \$7,700**
4	Future Precipitation Analysis	\$4,950
5	Project Shoreline Changes	\$3,300
6	Resilience Strategy	-
6.1	Initial Strategy Development	\$9,500
6.2	Strategy Evaluation	\$9,900***
6.3	Infrastructure Specific Strategies	\$5,500***
6.4	Benefit Cost Assessments	\$7,700

*Integration of these tasks with the SAP will require between 10 and 80 hours of labor at the rate of \$115 / hour, depending on the services selected.

**The fee for this task is \$2,750 with GIS analysis, \$7,700 without GIS analysis.

***Costs for travel would be in addition to fees shown and would be determined based on the number of meetings requested by the City.

STAR COMMUNITIES RATING SYSTEM CERTIFICATION

Introduction

As a component of its Sustainability Planning process, the City of Hallandale Beach has expressed interest in achieving STAR certification. STAR is the first national third-party certification program that recognizes sustainable communities and provides a tool for evaluating a community's level of sustainability, and is both a framework and formal certification program.

STAR provides local leaders with a framework for assessing their community's current level of sustainability, setting targets for moving forward, and measuring progress along the way. STAR consists of 7 main Focus Areas broken down into 49 Objectives. Each Objective contains multiple Outcome level measures and Actions which must be completed and documented to receive STAR credit. The STAR Focus Areas include: Built Environment, Climate & Energy, Economy & Jobs, Education, Arts & Community, Equity & Empowerment, Health & Safety, Natural Systems, and a bonus Innovation & Process goal area. Because each community addresses sustainability differently, there are three (3) levels of STAR subscription: 1) Participating STAR Community; 2) Reporting STAR Community; and 3) Leadership STAR Community.

Participating STAR Communities are those that conduct a preliminary assessment of their sustainability and establish a "baseline" sustainability score. This introductory level allows the municipality to assess current conditions and set goals and priorities for becoming more sustainable after seeing where they currently stand on the sustainability continuum. Conducting a preliminary assessment results in a preliminary score, ranging from 0 to the maximum 720 points. There are four (4) STAR certification levels: 5-STAR Community (600-720 points), 4- STAR Community (400-599 points), 3-STAR Community (200-399 points), and Reporting STAR Community (<200 points).

Reporting STAR Communities are those that have submitted data and supporting documentation into STAR's online reporting system and received verification and certification from STAR. Communities begin by aligning their existing programs, policies, and plans with the STAR Community Rating System using project management tools and resources provided by STAR. Then they gather data on the evaluation measures of their choice from the rating system and enter the data into STAR's online data entry and reporting platform.

FIGURE 2: STAR CERTIFICATION PROCESS

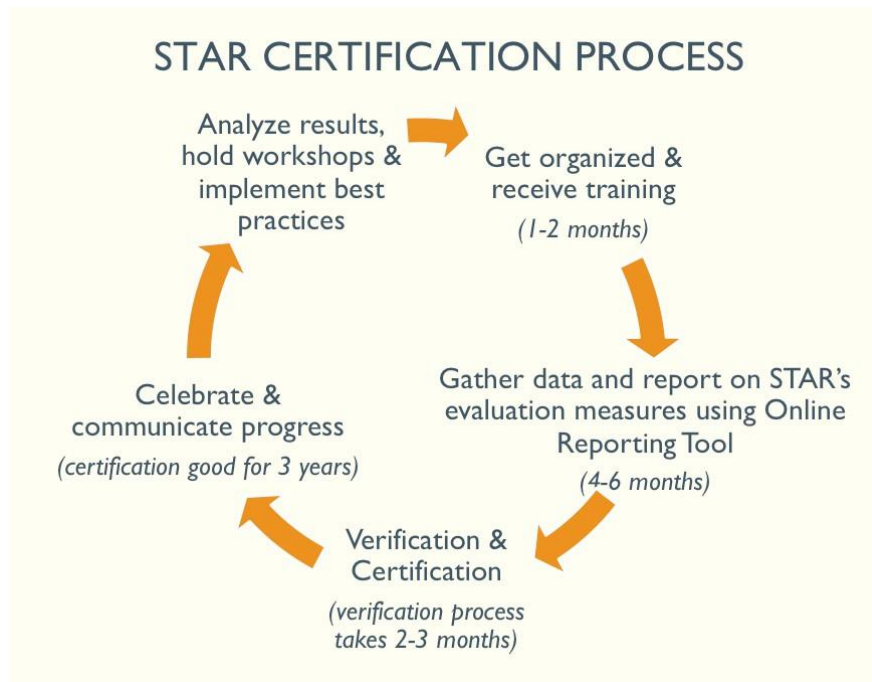


Figure 2 shows the STAR Certification Process. STAR estimates that the reporting and certification process takes most communities approximately one year to complete. The details of the STAR project schedule shall be agreed on with the City prior to project commencement. RS&H recommends that the STAR reporting effort be scheduled concurrently with work on the City's Sustainability Action Plan to take advantage of synergies between the related efforts.

This Scope of Work assumes the City will pursue a 3-STAR Community ranking. A 3-STAR rating is the typical level initially achieved by most communities, and can be improved upon later recertification. Note that according to STAR, final certified scores decrease on average 60-100 points after formal STAR technical staff review due to data discrepancies. Communities then have the opportunity to resubmit additional information to address data gaps in an attempt to increase their final scores, but it is important to note that preliminary scores are higher than final certified scores on average. As a result, the City should aim for approximately 300-350 points to achieve a 3-STAR rating. We believe a 3-Star Community ranking is achievable by the City.

STAR REPORTING APPROACH

To maximize efficiency and cost-effectiveness, this scope of work proposes a collaborative effort between the City and RS&H to take the City through the STAR certification reporting process. Because STAR addresses a broad range of policy measures, this approach will allow the City to focus STAR certification efforts in areas of its internal expertise while building its capacity to work within the STAR framework. Simultaneously, RS&H will complete STAR objectives corresponding to Sustainability Action plan focus areas for which we plan to collect data and perform analyses. RS&H will guide and facilitate the City through the STAR certification process. This collaborative approach will provide value to the City by allowing it to improve sustainability-related communication among City departments and break down organizational information silos while achieving a STAR rating at the lowest possible cost.

RS&H proposes to complete 20 of the 49 Objectives within the focus areas of Built Environment, Climate & Energy, Economy & Jobs, Health & Safety, Natural Systems, and Innovation & Process. Table 1 below shows the STAR Framework of Goals and Objectives, with the specific objectives to be addressed by RS&H

highlighted in yellow. Additional Objectives to be completed independently by Hallandale will be identified in the Preliminary Screening Process.

At Hallandale's option, RS&H will complete additional Objectives other than the 20 detailed in Table 1 on a time and materials basis at the rates described in the "Cost Estimate" section, below.

TABLE 2: STAR OBJECTIVES TO BE COMPLETED BY RS&H

Built Environment	Climate & Energy	Economy & Jobs	Education, Arts & Community	Equity & Empowerment	Health & Safety	Natural Systems	Innovation & Process
Ambient Noise & Light	Climate Adaptation	Business Retention & Development	Arts & Culture	Civic Engagement	Active Living	Green Infrastructure	Best Practices & Processes
Community Water Systems	Greenhouse Gas Mitigation	Green Market Development	Community Cohesion	Civil & Human Rights	Community Health	Biodiversity & Invasive Species	Exemplary Performance
Compact & Complete Communities	Greening the Energy Supply	Local Economy	Educational Opportunity & Attainment	Environmental Justice	Emergency Management & Response	Natural Resource Protection	Local Innovation
Housing Affordability	Energy Efficiency	Quality Jobs & Living Wages	Historic Preservation	Equitable Services & Access	Food Access & Nutrition	Outdoor Air Quality	Good Governance
Infill & Redevelopment	Water Efficiency	Targeted Industry Development	Social & Cultural Diversity	Human Services	Health Systems	Water in the Environment	
Public Parkland	Local Government GHG & Resource Footprint	Workforce Readiness	Aging in the Community	Poverty Prevention & Alleviation	Hazard Mitigation	Working Lands	
Transportation Choices	Waste Minimization				Safe Communities		

Note: Objectives Highlighted in yellow will be completed by RS&H. Additional Objectives will be completed independently by the City of Hallandale Beach.

RS&H's scope of work for the Sustainability Action Plan already includes working collaboratively with the City to complete the initial Preliminary screening.

Under the scope detailed here, RS&H proposes two additional phases which will take Hallandale through the STAR reporting process to receive a rating.

Note that the Scope proposed here for Phase 2 is subject to change. For example, if the City decides to pursue a 4-STAR rating instead of a 3-STAR rating the scope and fee detailed herein would require revision. If significant changes or deviations from the Phase 2 scope described here are anticipated at the conclusion on Phase 1, RS&H will renegotiate the Phase 2 scope and fee with the City before beginning Phase 2.

RS&H assumes Hallandale will pay all fees associated with maintaining STAR membership and applying for STAR verification.

Phase 1: Planning and Data Collection

In Phase 1, RS&H shall work with the City to establish a target point value, finalize the list of credits to be attempted, and develop an approach to coordinate the data gathering and reporting effort. RS&H shall conduct a teleconference meeting with Hallandale to discuss approach details and determine data sources. RS&H shall provide the City with a supplemental data request for the highlighted STAR Objectives identified in Table 2. RS&H assumes Hallandale will obtain data needed from third parties such as Broward County and pass it along to RS&H. At the conclusion of Phase 1, RS&H shall document the approach collaboratively agreed on with the City in a Screening Results Memorandum. This document will act as a valuable reference during the reporting phase, and will also be designed to communicate the benefits of Hallandale's status as a Participatory STAR member and Preliminary STAR Rating to the public, City Commissioners, and other stakeholders.

Phase 2: Application and Certification

In Phase 2, RS&H shall assemble application materials and supporting documentation, calculate Outcomes, and prepare STAR Worksheets for reporting for the highlighted Objectives identified in Table 2. Once complete, RS&H shall transmit these materials to the City. The City will submit the materials to STAR for verification along with those Objectives completed independently by the City.

Upon receiving initial verification results, applicants may opt to accept their Rating Level as assigned or revise and resubmit their application. STAR allows 30 days for resubmission. Most Cities choose to resubmit to improve their point score and STAR rating. This scope of work assumes that the City will resubmit to improve its score. If the City chooses to revise and resubmit application materials, RS&H shall respond to STAR reviewer comments, prepare additional documentation, and revise STAR worksheets as needed for up to 50% of highlighted objectives identified in Table 2. We assume that 50% will be sufficient to cover all reviewer comments.

At the conclusion of this process, Hallandale will receive its STAR certification, good for four years. RS&H shall then revise the Screening Results Memo to show the City's final results by objective. The revised Results Memo shall include a brief one-page executive summary which will be integrated into the

Sustainability Action plan, and which can function as content for communicating the City's STAR Certification achievement to stakeholders.

Table 3 breaks down the proposed tasks within these two phases and identifies which tasks will be completed by the City and by RS&H.

TABLE 3: STAR RATING SYSTEM SUPPORT - PROJECT TASKS

Phase	Task	Task Description	Responsibility
Preliminary Screening	--	Hallandale Prepares STAR Screening Crosswalk Tool with collaboration/support from RS&H (<i>Note – to be completed under Sustainability Action Plan Scope of Work</i>)	City / RS&H
Phase 1	1.1	RS&H Conducts Teleconference w/Hallandale to reconcile screening results and determine data sources	RS&H / City
	1.2	RS&H reviews STAR Screening Crosswalk and develops supplemental STAR data request	RS&H
	1.3	RS&H revises/issues supplemental data request that addresses STAR data not included in Sustainability Action Plan data request	RS&H
	1.4	RS&H prepares initial screening results memo	RS&H
Phase 2	--	Hallandale provides RS&H supplemental data	City
	2.1	RS&H puts together application materials, calculates outcomes, assembles documentation, prepares STAR worksheets, and provides completed materials to Hallandale	RS&H
	--	Hallandale Submits STAR application	City
	--	STAR Reviews the submission and verifies points	STAR
	2.2	RS&H responds to STAR verifier comments, prepares additional documentation and/or revises materials for up to 50% of Outcomes/Actions, and provides revised materials to Hallandale	RS&H
	--	Hallandale Resubmits revised materials	City
	--	STAR awards certification to Hallandale	STAR
	2.3	RS&H updates screening memo to show final results; integrates into the Sustainability Action Plan	RS&H

Note: RS&H effort for the above tasks is limited to those highlighted Objectives identified in Table 2 above. To ensure a cost-effective process it is assumed that Hallandale will complete additional STAR Objectives independently.

Fee

The scope of work for Phase 1 and Phase 2 tasks detailed above shall be completed for a lump sum fee of \$4,800 and \$20,900, respectively. Table 4 shows a summary description of each Phase with its total cost. Note that the City of Hallandale Beach shall be responsible for any costs associated with STAR Community Rating System membership, verification and training. These costs are payable directly to STAR and are not included in RS&H's cost estimate.

Table 4: Phase 1 & 2 Service Price Sheet

Phase Number	Description	Total Cost
1	RS&H shall work with the City to finalize the STAR screening / list of credits to be attempted, and develop an approach to coordinate the data gathering and reporting effort. Deliverables include a Supplemental Data Request and Screening Results Memo.	\$5,000
2	RS&H shall collect data, assemble application materials and supporting documentation, calculate Outcomes, and prepare STAR Worksheets for reporting for the Objectives identified in Table 1, and transmit them to Hallandale. After receiving STAR reviewer comments, RS&H will revise application materials for up to 50% of those Objectives. RS&H will deliver a final Results Memo that integrates the STAR assessment with the Sustainability Action plan and communicates the value of the City's STAR effort.	\$21,000

The hourly rate, hours and total for additional STAR Support Services are below. RS&H will provide additional STAR support based on the City's needs. This may include addressing additional Objectives not included in the list identified in Table 1. With an hourly rate of \$115, RS&H will work with the City to determine the scope, hours and fee of this task and any additional tasks relevant to this scope of work that are of interest to the City.

Table 5: Additional Services Price Sheet

Optional Service Task	Hourly Rate	Number of Hours to Complete	Total Task Cost
STAR Communities Rating System Certification – Additional Support	\$115	TBD	TBD



City of Hallandale Beach Sustainability Action Plan – Information Request

June 7, 2017

RS&H Project No.: 301-0040-000

	Datum	Description	Unit of Measure	Period	Format	Dept / Area	Data Use	Focus Area
	1. General Information							
1.1	Size	Total area within City's jurisdictional boundaries	Square miles (mi ²)	2014-2016	Word / PDF			General
1.2	Population	Number of year round residents of the City	Number of residents	2014-2016	Word / PDF		Community_Inventory	General
1.3	Visitors	Annual number of tourists/visitors to the City	Number of Visitors	2014-2017	Word / PDF		Community_Inventory	General
1.4	Employees	The number of full time equivalent staff (FTEs) employed by the City	Number of FTEs	2014-2016	Word / PDF		LGOP	General
1.5	Organizational Chart	Organizational Chart showing City Departments and Employee Roles	N/A	Current	Word / PDF		General	General
	2. Land Use and Transportation							
2.1	Zoning	Zoning Regulations	Final or proposed	Most recent	Citation & Hyperlink / Word / PDF			Landuse & Transportation
2.2	Land Development	Land Development Regulations (include requirements related to green space, density, mixed-use development, parking, etc.)	Final or proposed	Most recent	Citation & Hyperlink / Word / PDF			Landuse & Transportation
2.3	Design Standards	Design, architectural review, and historical preservation guidelines, standards, and policies.	Final or proposed	Most recent	Citation & Hyperlink / Word / PDF			Landuse & Transportation
2.4	Comprehensive Planning	Comprehensive Land Use Plan	Final or proposed	Most recent	Citation & Hyperlink / Word / PDF			Landuse & Transportation
2.5	GIS Data Inventory	Library or FTP Link to all available cadastral, environmental, land use/zoning, transportation, parcels, etc.	N/A	Most recent	Geodatabase or ESRI Shapefile format; Disk/USB or Hyperlink			Landuse & Transportation
2.6	Mobility	All ordinances, resolutions, directives or policies pertaining to alternative transit, pedestrian safety, bicycling planning and infrastructure, ride-share programs, including bicycle/pedestrian information including Bike/Ped Master Plan; sidewalk/bicycle facilities inventory.	N/A	Most recent	Citation & Hyperlink / Word / PDF			Landuse & Transportation
2.7	Motorized Transportation	Vehicle-Miles Traveled (VMT) data within the City's jurisdictional boundaries	VMT	2014-2016	Excel/ GIS/ model outputs		Community inventory	Landuse & Transportation
2.8	Freight Motor Vehicle Travel	Vehicle-Miles Traveled (VMT) data for (a) single unit trucks and (b) combination trucks within the City's jurisdictional boundaries	VMT	2014-2016	Excel/ GIS/ model outputs		Community inventory	Landuse & Transportation
2.9	Transit	Transit service data including routes/stops/headways, or other performance measures	VMT/LOS	2014-2016	Excel/ GIS/ model outputs			Landuse & Transportation
2.10	Parking	Information related to City's parking lots and facilities including number, type and location, use of smart or networked parking meters, demand-based pricing, etc.	Final or proposed	Most recent	Word / PDF / Excel			Landuse & Transportation
2.11	Best Development Practices	Local examples of development projects incorporating sustainable practices	Final or proposed	Most recent	Word / PDF			Landuse & Transportation
	3. Local Government Operations - Energy and Resource Efficiency							
	A. Facilities, Sites, and Assets							
3.1	Facilities	List of facilities owned/operated by [City]	Names of facilities	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.2	Sites / Assets	List of non-facility sites and/or assets (e.g. parks, pumping stations, etc.) under control of the local government	Names of sites, assets	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.3	Facility/Site/Asset Location	Address and Zip Code of each facility under control of the local government	Address and Zip Code	Most Recent	Excel		LGOP	Energy Efficiency & Renewables



City of Hallandale Beach Sustainability Action Plan – Information Request

June 7, 2017

RS&H Project No.: 301-0040-000

	Datum	Description	Unit of Measure	Period	Format	Dept / Area	Data Use	Focus Area
3.4	Floor Area	Gross heated/cooled floor area of each facility under the control of the local government (not applicable to sites or assets)	Square feet (ft ²)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.5	Leased Space Facilities	For any leased space that is not separately metered, supply the following: total building area, building area used by [City], total building annual electricity use, total annual use of fuels in stationary combustion (for each fuel type), occupancy rate (percentage of the building area that is occupied).	Square feet (ft ²); Kilowatt-hours (kWh); Gallons (Gal); %	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.6	Site / Asset management Software/ IT Resources	Information on computerized maintenance management system (CMMS), energy saving software, IT software evaluation and support policies, and green or energy saving practices within IT department.	Name(s), types and policies	Current or proposed	Hyperlink, Word, PDF			Energy Efficiency & Renewables
3.7	Facility Electricity Use	Annual electricity use by facility / site / asset	Kilowatt-hours (kWh)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.8	Facility Electric Demand	Annual peak demand by facility / site / asset	kW	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.9	Facility Utility-delivered fuel consumption	Annual utility-delivered fuel consumption (e.g. natural gas) by facility / site / asset	Thousand British Thermal Units (kBtu)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.10	Facility Decentralized fuel consumption	Annual decentralized fuel consumption by facility / site / asset for each fuel type (e.g. propane, kerosene, fuel oil, stationary diesel, biofuels, coal, etc.)	kBtu (all), Gallons (LPG, fuel oil, diesel); tons (coal)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.11	Steam / District Heating Use	Annual energy obtained from steam or district heating by facility (if applicable).	kBtu	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.12	District Cooling Use	Annual energy obtained from district cooling by facility (if applicable)	kBtu	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.13	Combined Heat and Power (CHP)	Annual amount of Combined Heat and Power (CHP) purchases (if applicable)	kBtu	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.14	Facility Energy Expenditure	Annual energy expenditure by fuel type, by facility / site / asset	\$	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.15	Streetlights	Inventory of streetlights by fixture type	Number in each class	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.16	Streetlights Expenditures	Annual energy expenditure on streetlights by fixture type	Number in each class	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.17	Traffic Lights	Inventory of traffic lights and crossing signals by fixture type. Include information on solar-powered crosswalks.	Number in each class	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.18	Fugitive HFC emissions	Quantity of fugitive emissions released each year from refrigerants and fire suppression equipment, by type of emission	Kilograms (kg)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.19	HFC's Stored / In Use	Base inventory of Hydrofluorocarbons (HFC's) in storage at each facility (at the beginning and end of each year). List type of HFC and quantity stored for each type. This includes HFC's being used by HVAC equipment, as well as any other supplies that are maintained.	Kilograms (kg)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.20	HFC's Purchased and Retired	Provide records (type and quantity) of all HFC purchases for stationary equipment during the year, including any capacity changes in equipment. Also provide type and quantity of any HFC containers or HFC-containing equipment sold or retired during each requested year.	Kilograms (kg)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables



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	B. Power Generation							
3.22	Power Generation Facilities	List of City-owned power generation facilities or units by type (e.g. power plants, solar photovoltaic (PV) systems and stationary/emergency generators)	List	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.23	Annual fuel combusted	Fuel types (e.g. diesel, gasoline, bio-diesel, coal, etc.) and annual consumption of each fuel combusted at each power-generating unit.	Gallons (gal)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.24	Power generation capacity	Nameplate capacity of power generation assets by type (e.g. PV systems)	Megawatts (MW)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
3.25	Annual net generation	Annual net generation of electricity from each power generation assets	Megawatt-hours (MWH)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables



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	<i>C. Water and Wastewater</i>							
3.26	Water Treatment	List of water treatment plants owned / operated by the City, if applicable. Include address/location of each plant.	List	2014-2016	Word / PDF		LGOP	Natural Resources & Resiliency
3.27	Wastewater Treatment Plants Owned / Operated	List Wastewater Treatment Plant(s) (WWTP) owned and operated by the City, if any. For each WWTP provide: population served, digester gas emissions per day, fraction of methane (CH4) in biogas, Biological Oxygen Demand (BOD5) load, Nitrogen load.	List; Population; MT CO2e	2014-2016	Excel		LGOP	Natural Resources & Resiliency
3.28	Septic Systems, City Owned	List of all septic systems owned / operated by the City, with daily BOD5 load for each system. Alternative: List population served by each septic system if BOD5 load is not available.	kg	2014-2016	Excel		LGOP	Natural Resources & Resiliency
3.29	Septic Systems, Community-wide	Inventory, maps, plans and policies related to septic systems within the City boundary, and the resident population served by septic systems.	List / Map, or GIS database	2014-2016	Word / PDF / Shapefile		LGOP	Natural Resources & Resiliency
3.30	Potable, Wastewater and Stormwater Infrastructure	Digital maps of existing potable, wastewater, and stormwater networks.	List / Map, or GIS database	Current	Word / PDF / Geodatabase / Shapefile		LGOP	Natural Resources & Resiliency
3.31	Facility Water Use	Annual (potable) water use by facility / site	Thousand Gallons (kGal)	2014-2016	Excel		LGOP	Natural Resources & Resiliency
3.32	Facility Sewer use	Annual sewer use by facility / site	kGal	2014-2016	Excel		LGOP	Natural Resources & Resiliency
3.33	Facility Irrigation Use	Annual irrigation use by facility / site	kGal	2014-2016	Excel		LGOP	Natural Resources & Resiliency
3.34	Water expenditure	Annual (potable) water expenditure by facility / site	\$	2014-2016	Excel		LGOP	Natural Resources & Resiliency
3.35	Sewer expenditure	Annual sewer expenditure by facility / site	\$	2014-2016	Excel		LGOP	Natural Resources & Resiliency
3.36	Irrigation expenditure	Annual irrigation expenditure by facility / site	\$	2014-2016	Excel		LGOP	Natural Resources & Resiliency
	<i>D. Recycling and Waste Minimization</i>							
3.37	Solid waste disposal	Annual solid waste disposal amounts by facility / site	Pounds (lb)	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.38	Solid waste disposal expenditure	Annual solid waste disposal costs by facility / site	\$	2014-2016	Excel		LGOP	Recycling & Waste Minimization



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3.39	Waste characterization audit results and associated diversion rates	Percentage and diversion rate by weight of each waste type within the government operations waste stream for the following categories, based on waste characterization/waste audit study: a. Percentage Mixed MSW b. Percentage Newspaper c. Percentage Office Paper d. Percentage Corrugated Cardboard e. Percentage Magazines / Third Class Mail f. Percentage Food Scraps g. Percentage Grass h. Percentage Leaves i. Percentage Branches j. Percentage Dimensional Lumber	Percentage (%)	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.40	Disposal units	Number, type and capacity of disposal units (e.g., dumpster, roll off, compactor) by facility / site	Count and Type, Cubic Yards (cy)	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.41	Unit Price	Unit pick-up price for each disposal unit	\$ / unit	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.42	Recycling amounts	Annual recycling amounts by facility / site	lb	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.43	Recycling expenditure	Annual recycling costs by facility / site	\$	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.44	Recycling revenue	Annual revenue generated from recycling by facility / site	\$	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.45	Composting	Annual composted amounts by facility / site	lb	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.46	Hazardous and universal waste disposal amounts	Annual hazardous and universal waste (e.g. fluorescent lighting, batteries, chemicals, waste oil, etc.) disposal amounts by facility / site	lb	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.47	Hazardous and universal waste disposal costs	Annual hazardous and universal waste disposal costs by facility / site	\$	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.50	Hazardous and universal waste types	Percentage of each commonly generated hazardous and universal wastes by facility / site	%	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.51	Waste combustion	Annual solid waste amounts sent for combustion	lb	2014-2016	Excel		LGOP	Recycling & Waste Minimization
3.52	City-owned Landfills and Waste Incinerators	List any landfills/ incinerators owned or operated by the City. For each landfill provide the following: Annual waste in place, annual greenwaste used for cover, waste characterization, year opened, year closed (if applicable), fraction of CH4 in landfill, from source testing, average annual rainfall. For incinerators provide annual emissions totals or EPA E-grid number.	Tons	2014-2016	Excel		LGOP	Recycling & Waste Minimization
4. Local Government Fleet / Transportation								
4.1	Vehicle Details	Make, model and model year, and fuel type (e.g. gasoline, diesel, electric, etc.) by vehicle. Include police / fire / rescue / trolley / bus / rapid transit vehicles if owned / operated by City.	Make, model, model year, fuel type	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.2	Non-highway vehicles and equipment	List of all non-highway vehicles directly owned/operated by [City] with make, model, model year, fuel type, fuel economy, and annual operating hours.	Make, model, model year, mpg, fuel type, operating hours/year	2014-2016	Excel		LGOP	Energy Efficiency & Renewables



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	Datum	Description	Unit of Measure	Period	Format	Dept / Area	Data Use	Focus Area
4.3	Bicycle / Segway Use	List all bicycles, Segways and other alternative mobility vehicles used by [City] departments (e.g. Police bike patrols and any others)	Number and type	2014-2016	Excel			Energy Efficiency & Renewables
4.4	Gasoline Use	Annual gasoline use by vehicle	Gallons (gal)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.5	Diesel Use	Annual diesel use by vehicle	Gallons (gal)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.6	Ethanol Use	Annual ethanol use by vehicle. Include proportion of ethanol in mixed fuels, (e.g. E-85)	Gallons (gal)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.7	CNG Use	Annual compressed natural gas use by vehicle	Gasoline Gallon Equivalent (GGE)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.8	LNG Use	Annual liquefied natural gas use by vehicle	Gasoline Gallon Equivalent (GGE)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.9	Biodiesel Use	Annual biodiesel use by vehicle. Include proportion of biodiesel in mixed fuels, (e.g. B20 or B100)	Gallons (gal)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.10	Electricity Use	Annual electricity use by vehicle	kWh	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.11	Non-highway fuel use	Annual fuel consumption for non-highway vehicles and equipment, by fuel type	Gallons (gal)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.12	Fuel Expenditure	Annual dollars spent on each fuel type by vehicle	\$	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.13	Mileage	Annual mileage by vehicle	Miles per year (mi/year)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.14	Fuel Economy	Fuel economy by vehicle	Miles per gallon (mpg)	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.15	Maintenance Cost	Estimated annual maintenance cost by vehicle	\$	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.16	Purchase Price	Purchase price by vehicle	\$	Most recent	Excel			Energy Efficiency & Renewables
4.17	Resale Value	Estimated value as a percentage of purchase price by vehicle	%	Most recent	Excel			Energy Efficiency & Renewables
4.18	Vehicle Air Conditioning Fugitive Emissions	1. Base inventory of HFC's in all vehicles (at beginning and end of each requested year). This includes the refrigerant capacity of each vehicle as well as any HFC's stored for maintenance purposes. Include refrigerant type (e.g. R-134a). 2. Records of all HFC purchases for vehicles during the year, including any capacity changes. 3. Records of any sales/disbursements of HFC containers or vehicles during the year. 4. For items 2 and 3 above, list any vehicles acquired or retired from service during the year, along with their refrigerant capacity.	Kilograms (kg) or Metric Tons	2014-2016	Excel		LGOP	Energy Efficiency & Renewables
4.19	Coolant Use and Recycling	Vehicle coolant usage rates and status of coolant recycling systems.	Gallons/year	2014-2016	Excel			Natural Resources & Resiliency
4.20	Vehicle Wash Systems	Quantity, annual water usage, recycling rate, heating system type of City owned/operated vehicle washing systems.	Number, Gallons (Gal), description	2014-2016	Excel			Natural Resources & Resiliency
4.21	Trolley Service	Details on the City's trolley service, including: ridership, VMT avoided as a result of the service, annual revenues and expenditures.	Number; \$	2014-2016	Excel		LGOP	Landuse & Transportation



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4.22	Fleet Operations Policies	All ordinances, resolutions, directives or policies pertaining to City fleet operations and maintenance.	Final or proposed	Most recent	Citation & Hyperlink / Word / PDF			Energy Efficiency & Renewables
4.23	Alternative Vehicle Policy	All ordinances, resolutions, directives or policies pertaining to alternative fuel vehicle purchases and use.	Final or proposed	Most recent	Citation & Hyperlink / Word / PDF			Energy Efficiency & Renewables



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	Datum	Description	Unit of Measure	Period	Format	Dept / Area	Data Use	Focus Area
	5. Community-wide Energy and Resource Conservation							
5.1	Community-wide Electricity Consumption	Annual community electricity use (total kWh purchased from utility) by class (residential, commercial, industrial)	kWh	2014-2016	Excel		Community_Inventory	Energy Efficiency & Renewables
5.2	Community-wide Renewable Energy Use	Annual community distributed generation totals from distributed energy systems (e.g., solar PV etc.) installed in the community (total kWh generated), percentage of community energy use that is from renewable sources, and community net metering data.	kWh, %	2014-2016	Excel			Energy Efficiency & Renewables
5.3	Water Supply	Percentage of [City] Community served by each: self-supply (wells), groundwater, and surface water.	%	2014-2016	Excel		Community_Inventory	Natural Resources & Resilience
5.4	Community Water Consumption	Water use per capita for each requested year	Gallons (gal) / person	2014-2016	Excel		Community_Inventory	Natural Resources & Resilience
5.5	Municipal Water Consumption	Total community-wide municipal supplied water consumption for each requested year.	Gallons (Gal)	2014-2016	Excel		Community_Inventory	Natural Resources & Resilience
5.6	Source of Municipal Supply	Percentage of the municipal water supply sourced inside and outside the community boundaries.	%	2014-2016	Excel		Community_Inventory	Natural Resources & Resilience
5.7	Wastewater Treatment Plant(s) (WWTP) Serving Community	List of all WWTPs serving the [City] community. Include: Total Population served by each WWTP, [City] population served by each WWTP,	Names, Population Number	2014-2016	Excel		Community_Inventory	Natural Resources & Resilience
5.8	Wastewater Treatment Plant(s) (WWTP) emissions	Provide the total annual Methane (CH4) and Nitrous Oxide (NO2) emissions for each WWTP serving the community.	Metric tons (MT)	2014-2016	Excel		Community_Inventory	Natural Resources & Resilience
5.9	Annual Wastewater Treatment Totals	Community-wide annual total gallons of wastewater to treatment (may be based on pump station average daily flow rates)	Gallons (Gal)	2014-2016	Excel		Community_Inventory	Natural Resources & Resilience
5.10	Septic Systems, Community proportion	Population of community served by septic tanks	Number	2014-2016	Excel		Community_Inventory	Natural Resources & Resilience



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5.11	Community Landfills and Waste Incinerators	List any landfills and waste incinerators which receive waste from the community of [City]. Indicate the percentage of waste generated in the community allocated to each facility. For landfills, indicate whether a landfill gas collection and control system is in place. For waste incinerators, provide directly measured emissions (CH4 or CO2e) or EPA E-grid number.	%, MT	2014-2016	Excel		Community_Inventory	Recycling & Waste Minimization
5.12	Community-wide waste to landfill	Annual mass of waste from [City] entering each landfill serving the community	Tons	2014-2016	Excel		Community_Inventory	Recycling & Waste Minimization
5.13	Community-wide waste characterization, based on waste audit	Percentage of each waste type within the communities municipal solid waste (MSW) stream for the following categories, based on waste characterization/waste audit study: a. Percentage Mixed MSW b. Percentage Newspaper c. Percentage Office Paper d. Percentage Corrugated Cardboard e. Percentage Magazines / Third Class Mail f. Percentage Food Scraps g. Percentage Grass h. Percentage Leaves i. Percentage Branches j. Percentage Dimensional Lumber	Percentage (%)	2014-2016	Excel		Community_Inventory	Recycling & Waste Minimization
5.14	Community-wide recycling amounts	Annual community-wide recycling amounts by commodity	Tons	2014-2016	Excel		Community_Inventory	Recycling & Waste Minimization
5.15	Community-wide recycling expenditures	Annual community-wide recycling expenditures by commodity	\$	2014-2016	Excel			Recycling & Waste Minimization
5.16	Community-wide recycling revenue	Annual community-wide revenue generated from recycling, by commodity	\$	2014-2016	Excel			Recycling & Waste Minimization
5.17	Community Composting	Annual quantity of material composted in the community for each requested year (provide quantities for food waste and green waste separately)	Tons	2014-2016	Excel			Recycling & Waste Minimization
5.18	Community alternative fuel / electric vehicles and associated infrastructure	Number of alternative fuel / electric vehicle registrations and number and type of electric vehicle charging stations in community	Number, type	2014-2016	Excel			Energy Efficiency & Renewables
5.19	Resource Efficient Building Data	Data on City's green building stock, including number and certification level of LEED and Green Globes certified buildings in the community.	Number, type	2014-2016	Excel			Landuse & Transportation



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	6. Regulatory Framework							
6.1	General	All mission or vision statements by department	Final or proposed	Current	Word/ PDF			General
6.2	Energy	All ordinances, resolutions, directives or policies promoting renewable energy, energy efficiency, energy consumption, energy savings rebates, and/or energy performance contracting programs	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Energy Efficiency & Renewables
6.3	Community-wide renewable energy use policies	Details on plans, policies and incentives relating to renewable energy generation (e.g., solar PV, solar thermal, wind, etc.). Include policies and zoning regulations encouraging use of renewable energy.	Name	Current or by year if multi-year	Word / PDF / Hyperlink		Community_Inventory	Energy Efficiency & Renewables
6.4	Recycling and Waste	All ordinances, resolutions, directives or policies pertaining to waste minimization, recycling and outreach. Include waste minimization / recycling goals and targets, waste reduction / recycling data to meet reduction goals, management plans, and product ban data.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Recycling & Waste Minimization
6.5	Pollution Prevention (P2)	All ordinances, resolutions, directives or policies pertaining to reducing the use of potentially hazardous materials. Include info related to integrated pest management, if applicable.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Recycling & Waste Minimization
6.6	Water	All ordinances, resolutions, directives or policies concerning water consumption, including water conservation policies/incentives and water use restrictions.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
6.7	Green Procurement	All ordinances, resolutions, directives or policies promoting green, sustainable, energy-efficient, or environmentally preferable procurement practices.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
6.8	Air Quality	All ordinances, resolutions, directives or policies pertaining to addressing air pollution and quality.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Landuse & Transportation
6.9	Environmentally endangered lands	All ordinances, resolutions, directives or policies pertaining to protecting, restoring and or enhancing sensitive natural areas.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Landuse & Transportation
6.10	Paper reduction policies	All ordinances, resolutions, directives or policies pertaining to reducing paper use, and data related to reduction of paper use, for example by implementing digital filing systems.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
6.11	Electronic Waste	All ordinances, resolutions, directives or policies pertaining to properly managing and reducing electronic waste.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
6.12	Social Sustainability	All ordinances, resolutions, directives or policies pertaining to preserving cultural heritage, enhancing neighborhood viability, and promoting a sense of place. Include information on cultural development programs and grants.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Landuse & Transportation
6.13	Economic Sustainability	All ordinances, resolutions, directives or policies pertaining to promoting and attracting businesses, tourism, and providing quality infrastructure and public services.	Final or proposed	Current or by year if multi-year	do			Education & Outreach
6.14	Sustainable / Green Events	Information on green or sustainability-themed events organized by the City, and ordinances, resolutions, directives or policies designed to reduce the environmental impact of events (i.e. by reducing waste, recycling, local procurement, carbon offsets, etc.)	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			
6.15	Open Space	All ordinances, resolutions, directives or policies pertaining to promoting and maintaining parks and trails.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Landuse & Transportation
6.16	Ecosystem and biodiversity conservation	All ordinances, resolutions, directives or policies pertaining to managing and enhancing ecosystems and biodiversity.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Landuse & Transportation



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6.17	Operations and Maintenance	All ordinances, resolutions, directives or policies pertaining to building preventive maintenance.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Energy Efficiency & Renewables
6.18	Local Food / Gardens	All ordinances, resolutions, directives, or policies pertaining to community gardens, local food production, community supported agriculture, and local food movements.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Landuse & Transportation
6.19	Urban Forestry / Tree Preservation	All ordinances, resolutions, directives or policies pertaining to urban forestry / urban greening / tree preservation.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Landuse & Transportation
	7. Climate Resiliency							
7.1	Climate Resiliency Documents	All ordinances, resolutions, directives or policies pertaining to climate resiliency, vulnerable areas (flooding and shoreline erosion), storm preparedness and evacuation plans.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.2	Climate Change / GHG Documents	All ordinances, resolutions, directives or policies concerning climate change, greenhouse gases, and/or CO2. Include Climate Change Plans and other green planning documents.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.3	GHG reduction targets and incentives	Specific reduction targets for GHG reduction (City operations and/or community-wide) and incentives encouraging GHG reductions or renewable energy.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.4	Climate Adaptation Plans and Partnerships	Climate adaptation plans, staff reports showing City is monitoring climate change ("CC"), committees/partnerships addressing CC, zoning/building codes addressing CC.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.5	Industrial Sector Efficiency	Industrial sector efficiency data including plans to improve efficiency in industrial sector, policies promoting improved data collection, regulations promoting reduced energy/water use in industrial sector, education/training to reduce energy/water use.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.6	Resource Efficient Building Codes and Policies	All ordinances, resolutions, directives or policies pertaining to green / resource efficient buildings, including building code sections requiring efficiency, and energy and water use information disclosure ordinances.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.7	Resource Efficient Public Infrastructure	Resource efficient public infrastructure data including data on targeted strategies to improve efficiency, codes/design standards for public infrastructure to increase efficiency, partnerships to reduce energy/water usage, sub-metering data	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.8	Green Infrastructure	Green Infrastructure (GI) data including data on green infrastructure and distribution in City, community-wide GI plan, partnerships to ensure GI practices used, incentive programs to encourage adoption of GI practices, GI monitoring programs, data on investment in GI within the City.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.9	Outdoor Air Quality	Outdoor air quality data including data on air quality attainment for criteria pollutants showing decreases, policies incentivizing employment density and diversity in transit use, partnerships to support transportation management associations or rideshare programs, data on traffic signal improvements to relieve congestion/idling.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Landuse & Transportation
7.10	Historically Vulnerable Areas	Description, digital elevation maps, topography, 100-year flood maps, priority areas with specific vulnerabilities.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF / GIS			Natural Resources & Resiliency
7.11	Stormsurge, Evacuation Routes and Sea Level Rise Projections	Storm surge maps, evacuation route maps, sea level rise projections, overlay zones for special adaptation action areas.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF / GIS			Natural Resources & Resiliency



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7.12	Infrastructure and Natural Resource Resiliency	Conservation easements	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF / GIS			Landuse & Transportation
7.13	Vulnerable Assets	1. Digital maps identifying vulnerable transportation, potable water, waste water, stormwater, electric and communication infrastructure, as well as facilities. 2. Data on renovation of public facilities to improve resiliency.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF / GIS			Natural Resources & Resiliency
7.14	Adaptation Action Areas	1. Criteria for adaptation action areas, with associated planning and risk-based decision support tools for infrastructure, water resources, natural systems and hazard mitigation. 2. Resolutions, policies, and memorandums of understanding regarding adaptation action areas. 3. Regulations, land use amendments and building codes regarding adaptation action areas.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.15	Adaptation improvements	List of climate adaptation improvement projects in capital improvement plans.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.16	Partnerships and stakeholder relationships	List environmental, conservation, sustainability, and higher education partners and or/stakeholders the City has established relationships with or has worked with to further sustainability/environmental initiatives (i.e. Nature Conservancy, University of Miami, etc.)	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.17	Emergency Preparedness and Response	All ordinances, resolutions, directives or policies pertaining to storm preparedness, emergency response and evacuation plans. Include ISO ranking, compliance with National Fire Protection Association standards, National Incident Management System compliance, whether participating in regional emergency planning commission, and annual reports/reviews of emergency response efforts.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.18	Natural and Human Hazard Data	Data showing: reduction in number of homes below code standards located in high risk areas, reduction in percentage of residents living in designated high risk areas, increased resilience to hazard threats over time, insurance or incentive structures to remove residents from high hazard areas.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.19	Hazard Area Zoning and Building Codes	Zoning regulations limiting development in high hazard areas, building codes/standards for building in areas of high hazard vulnerability.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency
7.20	Hazard Mitigation and Post-disaster plans	Hazard mitigation action plans and post-disaster plans addressing long range development issues.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Natural Resources & Resiliency



City of Hallandale Beach Sustainability Action Plan – Information Request

June 7, 2017

RS&H Project No.: 301-0040-000

	Datum	Description	Unit of Measure	Period	Format	Dept / Area	Data Use	Focus Area
	8. Education and Outreach							
8.1	Education / Outreach Programs, Campaigns, and Plans	List and examples of programs, campaigns, and plans for outreach and education on sustainability, climate change, greenhouse gas reduction, resource-efficient buildings, waste reduction and recycling, community awareness of natural hazards and hazard resiliency, and other City initiatives.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Education & Outreach
8.2	Sustainability training / employee engagement / hiring and retention	List and examples of sustainability related training for City employees, employee engagement programs and incentives, integration into hiring and retention policies.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Education & Outreach
8.3	Sustainability / green marketing, tourism and business development	List and examples of programs or policies to promote the City of [City] as a sustainable/green tourism destination or business community.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Education & Outreach
8.4	Education / Outreach points of contact	Contact person(s) responsible for City's public education and outreach programs, and contact(s) for public relations firm retained by the City, if applicable.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Education & Outreach
8.5	Communications Plan	List and examples of Communications Plan(s) prepared or utilized by the City, if applicable.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Education & Outreach
8.6	Past performance of public outreach campaigns	Survey or other data indicating past performance of public outreach campaigns or programs.	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Education & Outreach
	9. Funding and Evaluation							
9.1	Annual Budget	Total budget under control of the City	Dollars (\$)	2014-2016	Word / PDF			Funding & Evaluation
9.2	Capital Improvement Plan	Current or Proposed Capital Improvement Plan for the City	Final or proposed	Current	Outlook/Word/ PDF		LGOP, Community_Inventory	Funding & Evaluation
9.3	Existing sources of revenue	Information on fees / revenues that could potentially be used to fund sustainability initiatives (example: impact fees, permitting fees, transaction fees, etc.)	Final or proposed	Current	Outlook/Word/ PDF		LGOP, Community_Inventory	Funding & Evaluation
9.4	Sustainability Incentives	Information on incentives currently provided by the City to encourage energy efficiency, water efficiency, recycling, alternative transportation, GHG emissions reduction, or other green/sustainable behaviors among the community or City employees.	Final or proposed	Current	Outlook/Word/ PDF		LGOP	Funding & Evaluation
9.5	Revolving Funds	Information on revolving fund(s) currently in use in the City, if applicable.	Final or proposed	Current	Outlook/Word/ PDF		LGOP	Funding & Evaluation
9.6	Sustainability Financing	Information on funding mechanisms used or available for use by the City to finance sustainability initiatives (e.g. grants, revolving funds, PACE, performance-based contracts, etc.)	Final or proposed	Current or by year if multi-year	Citation & Hyperlink / Word / PDF			Funding & Evaluation



City of Hallandale Beach Sustainability Action Plan – Information Request

RS&H Project No.: 301-0040-000

June 7, 2017

	Datum	Description	Unit of Measure	Period	Format	Dept / Area	Data Use	Focus Area
	10. Contacts							
10.1	Electric Utility Contact(s)	Contact person(s) for City accounts at FPL	Name, Address, Phone #, Email	Current	Outlook/Word/ PDF		LGOP, Community_Inventory	General
10.2	Natural Gas Utility Contact(s)	Contact person(s) for City accounts at Gas Utility Providers, and any other distributed energy providers	Name, Address, Phone #, Email	Current	Outlook/Word/ PDF		LGOP, Community_Inventory	General
10.3	Distributed Energy Contact(s)	Contact person(s) for propane distributors and providers, and any other distributed energy providers serving the City	Name, Address, Phone #, Email	Current	Outlook/Word/ PDF		LGOP, Community_Inventory	General
10.4	County Services Contact(s)	Contact person(s) at County for services provided on behalf of [City]	Name, Address, Phone #, Email	Current	Outlook/Word/ PDF		LGOP, Community_Inventory	General
10.5	HVAC Maintenance Contact(s)	Contact person(s) for City's HVAC Maintenance Provider	Name, Address, Phone #, Email	Current	Outlook/Word/ PDF		LGOP	General
10.6	Public Works Contact(s)	Contact person(s) for City Public Works contractors	Name, Address, Phone #, Email	Current	Outlook/Word/ PDF		LGOP	General

Sustainability Action Plan Community Workshop Summary

Goal Area	Objective	Action	Mtg 1	Mtg 2	Total
Natural Systems	Green Infrastructure	Increase the percentage of funding invested in green infrastructure	8	9	17
Built Environment	Transportation Choices	Adopt a bicycle and/or pedestrian master plan that prioritizes future projects to improve safety and access to non-motorized transportation	5	3	8
Natural Systems	Water in the Environment	Adopt community regulations that protect water quality OR participate in a regional pollutant trading program that reduces watershed pollution levels	4	4	8
Education, Arts & Community	Educational Opportunity & Attainment	Provide full-day kindergarten for low-income students and students with special needs	3	4	7
Education, Arts & Community	Educational Opportunity & Attainment	Offer multiple pathways to graduation as a way to improve educational outcomes for students	3	4	7
Equity & Empowerment	Poverty Prevention & Alleviation	Adopt a community-wide plan to reduce poverty	6	1	7
Health & Safety	Active Living	Achieve recognition as a Bicycle-Friendly Community or Walk-Friendly Community	3	4	7
Built Environment	Housing Affordability	Analyze transit access and transportation costs for neighborhoods with housing affordable to low- and moderate-income households	6		6
Built Environment	Housing Affordability	When new transit or other major infrastructure investments are planned, analyze the likelihood and extent to which housing costs are anticipated to increase in low- and moderate-income neighborhoods so that appropriate strategies can be developed to preserve and create long-term affordable housing	4	2	6
Built Environment	Transportation Choices	Subdivision and other development regulations require walkability standards that encourage walking and enhance safety	6		6

Economy & Jobs	Targeted Industry Development	Educate residents about the economic impact of targeted industry sectors in the community	2	4	6
Natural Systems	Green Infrastructure	Adopt local design criteria and associated codes that require proactive green infrastructure practices for new developments	3	3	6
Natural Systems	Green Infrastructure	Create incentive programs to encourage land owners to adopt green infrastructure practices that link to the broader green infrastructure systems	3	3	6
Natural Systems	Outdoor Air Quality	In collaboration with a local university or health department, conduct a study to evaluate the health impacts of acute exposure to outdoor air pollutants, particularly in consideration of environmental justice and equity impacts	2	4	6
Climate & Energy	Resource Efficient Public Infrastructure	Adopt codes or design standards for new public infrastructure that will increase energy and water efficiency	3	2	5
Education, Arts & Community	Community Cohesion	Establish a department with staff assigned to work as liaisons with specific neighborhoods	5		5
Health & Safety	Indoor Air Quality (IAQ)	Provide free, subsidized, or at-cost supplies to test and monitor IAQ to prevent harm from common pollutants	2	3	5
Climate & Energy	Climate Adaptation	Improve facilities throughout the community to be better prepared for climate change threats	4		4
Education, Arts & Community	Social & Cultural Diversity	Adopt a policy to encourage diversity in local government appointments		4	4
Equity & Empowerment	Civic Engagement	Create a volunteer program for residents to assist the local government with special events, services, and operations	2	2	4
Equity & Empowerment	Civil & Human Rights	Establish an independent civil and/or human rights commission to ensure access, equity, and inclusion	4		4

Economy & Jobs	Workforce Readiness	Create a workforce development committee to align post-secondary education, workforce development training programs, and economic development strategies	1	3	4
Health & Safety	Community Health & Health Systems	Adopt a health in all policies statement or policy commitment for local decision-making	4		4
Built Environment	Compact & Complete Communities	Require walkability standards for new development that include sidewalks on both sides of roadways, street trees, ADA accessible crosswalks, roadways designed for maximum travel speeds of 25 mph, and maximum block lengths in transit-served areas and areas identified for compact, mixed-use development		3	3
Built Environment	Housing Affordability	Implement programs to preserve and maintain existing subsidized and unsubsidized affordable housing in transit-served areas, compact and mixed-use areas, and areas with rapidly-rising housing costs	3		3
Built Environment	Housing Affordability	Work with private employers to provide live-near-your-work or employer-assisted housing financial incentives	3		3
Built Environment	Transportation Choices	Local government offers employee incentives to encourage commuting by modes other than single-occupancy vehicles	3		3
Climate & Energy	Greenhouse Gas Mitigation	Implement specific programs and services or create facility upgrades that transition the community towards the use of alternatives modes of transportation and low-emissions vehicles	3		3

Climate & Energy	Waste Minimization	Create a waste-to-energy conversion system for the community	3	3
Equity & Empowerment	Civic Engagement	Partner with business, civic, and neighborhood organizations to increase voter registration and turnout OR volunteer opportunities and participation OR ongoing civic engagement in local decision-making	3	3
Economy & Jobs	Local Economy	Support import substitution strategies that positively impact key sectors of the local economy	3	3
Health & Safety	Food Access & Nutrition	Implement an “Increase Your Food Bucks” program for farmers markets	3	3
Health & Safety	Food Access & Nutrition	Demonstrate that the local public school district has adopted a model school wellness policy	3	3
Natural Systems	Green Infrastructure	Create a community-wide green infrastructure plan that is integrated with other relevant local plans	3	3
Natural Systems	Invasive Species	Use incentive programs to encourage local businesses and private owners to grow and sell native or desirable plants and animals and not sell invasive species or other harmful plants and animals	3	3
Natural Systems	Water in the Environment	Provide incentives to residents and developers to protect and restore critical watershed protection areas	3	3
Built Environment	Compact & Complete Communities	Adopt advanced parking strategies in transit-served areas and areas identified for compact, mixed-use development	2	2

Built Environment	Public Spaces	Adopt regulatory strategies or development incentives to create, maintain, and connect parks and public spaces	2	2
Climate & Energy	Greening the Energy Supply	Create a policy to ensure that the local government's transportation and non-transportation energy supplies increasingly come from renewable and alternative sources	2	2
Climate & Energy	Waste Minimization	Adopt specific product bans that will significantly advance progress towards waste reduction goals	2	2
Climate & Energy	Waste Minimization	Implement incentives or enforce regulations ensuring that residents and businesses are working toward community waste reduction targets	2	2
Education, Arts & Community	Historic Preservation	Provide technical assistance to property owners or non-profit organizations seeking to add properties or historic districts to the National Register of Historic Places or the comparable state register	2	2
Equity & Empowerment	Environmental Justice	Create an Environmental Justice Collaborative Group (EJCG) composed of residents, stakeholders, and environmental professionals to assess risk and exposure, set targets, implement projects, and monitor improvements	2	2
Equity & Empowerment	Environmental Justice	Incorporate environmental justice criteria and priorities into zoning, land use planning, permitting policies, and development of new projects	2	2
Equity & Empowerment	Environmental Justice	Create community benefit agreements (CBAs) for projects associated with prioritized environmental justice sites and proposed development projects with environmental justice concerns	2	2

Equity & Empowerment	Environmental Justice	Implement projects to reduce acute exposure to contaminants and risks associated with environmental justice sites	2	2
Equity & Empowerment	Equitable Services & Access	Adopt an equity plan that evaluates current conditions in the community and establishes targets to improve equitable access and proximity in at least the categories identified in the outcome measure	2	2
Economy & Jobs	Green Market Development	Review and amend zoning regulations to remove barriers or provide flexibility for green businesses	2	2
Economy & Jobs	Green Market Development	Create programs to help businesses transition to new green practices	1	1
Health & Safety	Community Health & Health Systems	Use a performance management system to monitor and improve health services and programs that promote positive health outcomes and expand access to health care	2	2
Health & Safety	Food Access & Nutrition	Adopt menu-labeling requirements or regulations that discourage, tax, or prohibit the sale of unhealthful foods or beverages	2	2
Health & Safety	Food Access & Nutrition	Demonstrate that local schools or the public school district has received certification from the USDA Healthier US Schools Challenge or an award from the Alliance for a Healthier Generation in the past 3 years	2	2

Health & Safety	Indoor Air Quality (IAQ)	Provide grants or loans to remediate indoor air pollution problems in low-income homes or affordable rental units	2	2
Health & Safety	Natural & Human Hazards	Build or renovate locally-owned public facilities to meet higher building code standards to be used as shelters, command centers, and to set an example for the community	2	2
Natural Systems	Green Infrastructure	Adopt a policy requiring relevant departments be engaged during early reviews of proposed developments to ensure that project sites are evaluated for green infrastructure potential and environmental protections are put in place prior to construction	2	2
Natural Systems	Invasive Species	Develop a community-wide invasive species integrated pest management plan	2	2
Natural Systems	Water in the Environment	Engage in restoration projects for critical water bodies and buffer zones that protect those water bodies	2	2
Built Environment	Infill and Redevelopment	Establish a program to provide information and assistance to owners, potential buyers, and developers regarding brownfield assessments, redevelopment strategies, and available resources	1	1
Built Environment	Public Spaces	Conduct a study regarding the economic impact of parks and public spaces on the local economy to understand their contributions to community satisfaction and tourism	1	1
Built Environment	Public Spaces	Provide assistance for low-income users to access and use parks and public spaces through subsidy, scholarships, and discounts	1	1
Climate & Energy	Greenhouse Gas Mitigation	Create an education and outreach campaign to engage citizens and businesses in GHG reduction efforts	1	1

Climate & Energy	Greenhouse Gas Mitigation	Implement specific programs and services or create facility upgrades that reduce waste in the community	1	1
Climate & Energy	Greening the Energy Supply	Adopt a community-wide plan that includes a comprehensive programmatic and policy approach to shift the community towards alternative fuels and renewable energy sources, especially for non-transportation uses	1	1
Climate & Energy	Greening the Energy Supply	Create incentive programs to support the development of renewable and alternative fuel infrastructure	1	1
Climate & Energy	Resource Efficient Buildings	Adopt a building energy efficiency plan to improve the energy and water efficiency of commercial, residential, and institutional buildings in the community	1	1
Equity & Empowerment	Civic Engagement	Create a mock youth voting program to teach children about democracy, elections, and the importance of voting	1	1
Equity & Empowerment	Environmental Justice	Assess the risk and exposure to toxins related to the community's prioritized environmental justice sites	1	1
Equity & Empowerment	Environmental Justice	Create an interdepartmental working committee within the local government to guide and support environmental justice activities	1	1
Economy & Jobs	Business Retention & Development	Appoint an advisory body to provide recommendations and represent the business community in local decision-making	1	1
Economy & Jobs	Business Retention & Development	Provide focused support, resources, and services to young entrepreneurial companies through business incubators	1	1
Economy & Jobs	Green Market Development	Implement a green business promotion program	1	1
Economy & Jobs	Quality Jobs & Living Wages	Enforce the living wage policy with a living wage officer or equivalent function	1	1

Economy & Jobs	Quality Jobs & Living Wages	Require that local government contractors provide at least 2 of the following benefits to their employees: paid family leave, flexible scheduling, job sharing, and easily accessible childcare	1	1
Health & Safety	Emergency Prevention & Response	Achieve accreditation by the Emergency Management Accreditation Program (EMAP)	1	1
Health & Safety	Natural & Human Hazards	Develop a hazard mitigation action plan that includes an all-hazard vulnerability assessment of the community's primary hazard threats	1	1
Health & Safety	Natural & Human Hazards	Implement highest priority projects utility improvements listed in the hazard mitigation plan	1	1
Health & Safety	Safe Communities	Perform ongoing data collection, evaluation, and monitoring from multiple agencies to track trends and identify emerging community needs	1	1
Natural Systems	Water in the Environment	Create partnerships to address sources of non-point source water pollution not directly covered by local authority or control	1	1



Hallandale Beach
PROGRESS. INNOVATION. OPPORTUNITY.

Sustainability Action Plan



Acknowledgments

Message from Roger M. Carlton, City Manager

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Short-Term Goals
Long-Term Goals

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Materials Minimization & Recycling
Land Use & Transportation
Natural Resources & Resilience
Education & Outreach
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Hallandale Beach City Commission

Michael Butler, Commissioner

Richard Dally, Commissioner

Michele Lazarow, Vice Mayor

Anabelle Lima-Taub, Commissioner

Keith London, Mayor

City Manager

Roger M. Carlton

City of Hallandale Beach Green Initiatives Coordinator/ Sustainability Action Plan Project Manager

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Carolyn Smith, Procurement Specialist

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Land Use & Transportation

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Acknowledgements

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Manga Ebbe, Project Manager

Eustacio LaRosa, Public Works Superintendent

Meghan Peteler, Administrative Assistant

Jesus Rodriguez, Fleet Service Superintendent

Message from Roger M. Carlton

CITY MANAGER

Over 90 years ago, Luther Halland founded what is now Hallandale Beach. Our City has evolved from a small farming community to one of the fastest growing cities in Florida. In recent years, the City has sought balanced growth and preservation of what makes our community an attractive destination – our beaches, waterways and parks; public infrastructure; a thriving business sector; and most of all the friendly, diverse and forward-looking character of our citizens.

A commitment to our prosperity, our people and our place means we must carry the City's legacy forward to the future. This Sustainability Action Plan is just the beginning of this process. We know our region faces challenges posed by a growing population, limited resources, accelerating technologies and a changing climate. Beginning with this plan, we will strive to lead by example, ensuring City operations are low-impact, efficient and responsive. We will also work to improve our community by implementing policies that protect the environment, use resources responsibly, support vulnerable members of our community and proactively adapt to our changing world.

In the process of developing this Sustainability Action Plan, many staff members of diverse backgrounds and areas of expertise evaluated practices and developed projects to improve performance, which will lead to an estimated \$2.2 million in tax dollars saved over the next ten years. If adopted, the City will reduce water use by 20% through efficient fixtures and reusing water for irrigation. Energy conservation measures that will cut the city's utility bills by about \$200,000 per year have been identified. The City's network of bike and pedestrian paths will be expanded, enhancing the health and safety of our citizens. In the area of materials minimization, staff is developing a program to divert 30% of the City's waste through recycling by 2022. This program could save \$1 million over ten years by increasing recycling and reducing disposal fees.

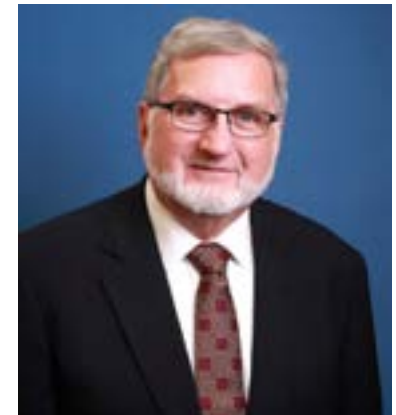
The vision of sustainability included in this Sustainability Action Plan will help make Hallandale Beach the vibrant, innovative and resilient community it should be – now and for future generations. With direction from the City Commission, staff is committed to working on the actions that have been identified. The City will continue to work with the Southeast Regional Florida Climate Compact, Broward County, our peer local governments and the citizens of Hallandale Beach as we accomplish the sustainability goals. The City believes the value of its Sustainability Action Plan is beyond question. We invite robust community participation throughout its implementation.

The foresight of the City Commission for authorizing the Sustainability Action Plan and the diligence of the City team, led by Sue Fassler, is extraordinary. RS&H, Inc. deserves accolades for the incredible amount of leadership and effort that they put forth throughout the development of this Plan. Focus on sustainable operations will make a difference in the prosperity of our businesses, the well-being of our people and the environmental integrity of this beautiful place we call Hallandale Beach. As the City grows and adapts with the times, sustainability will prepare the entire Community to seize opportunities ahead. The residents and business people of Hallandale Beach look forward to continued progress and prosperity in the years to come.

Sincerely,

Roger M. Carlton, City Manager

Message



“A commitment to our prosperity, our people and our place means we must carry the City's legacy forward to the future.”

Roger M. Carlton

Summary

The Sustainability Action Plan (SAP) aims to improve the quality of life for all in the community while protecting the environment, assuring continued prosperity and developing the resilience needed to face future challenges. The SAP leads by example through operating a low-impact, efficient and responsive City government. It is important to realize that sustainability is not achieved through a one-time effort. Thus, the City views this plan as a living document, which establishes a system that will be managed over time to continually improve and evaluate the City's performance.

To develop this plan, the Project Management Team measured the City's existing performance, built the capacity of staff to make a difference and identified opportunities for environmental and social benefits that yield measurable financial returns, known as return on investment (ROI). These benefits can be reinvested in future expanded efforts to sustain our City.

In developing this strategy the City has been guided by a commitment to: reduce energy; fuel and water use; minimize what the community throws away; enhance places and transportation choices; safeguard natural resources; inform and expand commitment to the SAP from employees and citizens; and obtain the funding necessary for success.

These commitments are formalized within six focus areas:



Summary

Summary

The SAP establishes 14 short-term (five-year) goals within each focus area to ensure accountability for results:

Summary

TABLE 3: HALLANDALE BEACH SHORT-TERM SUSTAINABILITY GOALS

BY 2022	RESOURCE CONSERVATION & EFFICIENCY  <ul style="list-style-type: none"> Reduce electricity consumption of City operations by 15% Reduce potable water consumption of City operations by 20% Displace 10% of gasoline / diesel fuels with fuel efficiency or alternative fuels 	MATERIALS MINIMIZATION & RECYCLING  <ul style="list-style-type: none"> Achieve a 30% diversion rate from recycling and composting Reduce total waste from City operations by 5% through source reduction 	LAND USE & TRANSPORTATION  <ul style="list-style-type: none"> Establish targeted green building standards for new public, commercial and multifamily buildings and infrastructure Increase existing percentage of the bicycle/ pedestrian network that attains Level of Service B or better by 10% annually
	NATURAL RESOURCES & RESILIENCY  <ul style="list-style-type: none"> Complete a vulnerability assessment and adaptation action plan Improve the City's Community Rating System classification to 5 Complete a dune management plan 	EDUCATION & OUTREACH  <ul style="list-style-type: none"> Train and achieve commitment from 100% of employees to understand and contribute to sustainability initiatives Develop a sustainability communications plan 	FUNDING & EVALUATION  <ul style="list-style-type: none"> Fund sustainability action plan projects with 50% internal funds, 50% external funds (grants and developer contributions) Measure and monitor 50% of 19 sustainability key performance indicators

*The contribution of certain projects to goals marked with an asterisk cannot be calculated at present. As projects and project ideas are developed further their contributions will be calculated.

Summary

The Project Management Team has developed the projects identified in this SAP as the first necessary step toward achieving the stated goals. The outcomes will produce significant environmental benefits for the City. The outcomes are based on a commitment to improving the quality of life for the City's residents, establishing a sustainable platform for businesses and generating positive net returns on investment for the City and its stakeholders. The first set of sustainability projects are projected to generate close to \$7 million in revenue or avoided costs and \$2.2 in net benefits over ten years – after accounting for all estimated necessary investments.

Summary

\$2.2 Million

Net Benefit:

LED Streetlights / LED Interior Lighting / Solar Thermal Systems / Existing City Building Commissioning / Electric Vehicles & Infrastructure / Increase Fuel Economy / Indoor Water Fixtures and Fittings Efficiency / HVAC controls / Right Size Fleet / Expand Reuse Water Projects / Expanded Service Hours Work Week / Irrigation Efficiency / Increase Community-wide Recycling / Green Purchasing Program / Composting Feasibility Assessment / Bikeshare / Build out Bicycle and Pedestrian Infrastructure / Develop a Vulnerability / Adaptation Assessment / Dune Protection Plan / Low Impact Development Standards / Integrate Sustainability into Employee Training & Increase Employee Participation / Communications Plan / Develop Green Event Policies / Utility Management System / Revolving Fund / Complete a Greenhouse Gas Inventory & Set Reduction Targets / STAR Communities Certification

Sustainability is good business and crucial for the future. In a report to investors in 2017, Moody's Investors Service, Inc. stated that it would begin incorporating climate change into its credit ratings for state and local bonds. Cities that choose not to deal with risks associated with sea level rise and climate change in general may see higher interest rates in the future. As the City implements this SAP, it will continually improve processes and monitor performance to be ready for new risks and opportunities. Within five years, the City anticipates that these sustainable actions will enhance the vibrancy, inclusiveness

and the natural and cultivated beauty of the community. It is critical that the City prepares for the future in an economical and equitable manner that uses valid data upon which to make investments from limited resources.



Background

Acceptance of this report will commit Hallendale Beach to embarking on a journey towards sustainability to enhance environmental quality, enrich the economy and strengthen the well-being of citizens and stakeholders.

As with any journey, there is a time for planning, a time for experiencing and a time for reflecting. This is similar to the “Plan, Do, Check, and Act” cycle, a proven tool used in business and government to systematically move an organization towards its long-term goals. Achieving ambitious goals requires an awareness of the conditions that exist now, defining a desired future, setting a path to get there and executing the plan.

In 2017, the City selected the firm RS&H, Inc. to guide it through the initial steps of the sustainability journey and help craft a strategic approach for the next several years. RS&H, Inc. is a Florida-based, multi-discipline facilities and infrastructure consulting firm that has completed over 50 sustainability projects in the state with a focus on both technical and adaptive solutions. During the planning stage, the team identified those elements of the City’s day-to-day operations where the triple bottom line (i.e. people, planet and profit) was pivotal to success.

In each focus area, a primary emphasis was placed on defining the business case for sustainability. The team identified projects that would move the City toward a more sustainable future and also create a positive economic return over time through improving efficiency, decreasing waste and minimizing risks. The approach also considered the quality of life of community members, care for the natural environment and equity for all socioeconomic groups.

The SAP includes six focus areas shown in Table 1:

TABLE 1: SAP FOCUS AREAS

 RESOURCE CONSERVATION & EFFICIENCY	 MATERIALS MINIMIZATION & RECYCLING	 LAND USE & TRANSPORTATION
 NATURAL RESOURCES & RESILIENCY	 EDUCATION & OUTREACH	 FUNDING & EVALUATION

Background

Hallandale Beach intends to lead by example through operating an efficient and responsive city government which mitigates negative environmental impacts by enhancing beneficial policies and projects in Hallandale Beach. The City understands that sustainability is not achieved through a one-time effort; therefore, this plan establishes a process that will be managed over time to continually improve the City's performance. The process provides a framework for interaction across the City's complex systems that seeks to break down departmental silos and lead to coordination between City staff, elected officials and all external stakeholders.

The approach used to develop this SAP measures the City's sustainability performance, builds capacity among staff and yields environmental and social benefits that generate economic returns. These returns can then be reinvested into future efforts that remediate past practices and enhance resiliency.

Potential solutions to the City's sustainability challenges were identified through assessments of current conditions (baseline assessment) and comparison with peers (benchmarking). Next, 25 representatives from across City operations worked together to establish goals and develop a portfolio of impactful projects. Moving forward, the City will implement the projects included in the following pages and evaluate the SAP's progress.

The Sustainability Action Plan is not designed to sit on a shelf. It is a living document of a journey that takes what the City learns and applies it to moving forward in a better way. As the City Commission translates the SAP to policy, all stakeholders are welcome to join in the effort and help to ensure that the goals are met.

Background

Establish < Goals



SOLUTIONS

The first step in the SAP process was to establish a baseline for government operations by thoroughly evaluating performance in the City's six chosen focus areas. Analysis of the City's diverse operational data resulted in a comprehensive picture of the City's current operations, resource expenditures and environmental impacts. This baseline revealed opportunities for improvement and will serve as a reference for measuring progress in the future. Furthermore, more than 15 interviews with City staff generated ideas and potential solutions. Comparing Hallandale Beach's performance to three peer cities further identified strategies and projects with the potential to improve performance.

The tool the Project Team used was the STAR Community Rating System. Established by local governments for Sustainability USA, the U.S. Green Building Council and the National League of Cities, STAR is a voluntary, self-reporting framework for evaluating, quantifying, and improving the livability and sustainability of U.S. communities. Used as an evaluation tool, STAR facilitates meaningful comparisons of cities' sustainability performance. Cities that formally submit for certification are eligible to receive a designation as a 3-STAR, 4-STAR or 5-STAR community. Nationwide, there are thirty-two 3-STAR communities, twenty-five 4-STAR communities and four 5-STAR communities.

The project team informally used STAR to benchmark Hallandale Beach's sustainability progress to three similar communities, and performed a feasibility assessment to determine if the City is ready to pursue STAR certification. These cities were chosen due to their geographic and demographic similarities to Hallandale Beach:

- 1 Pinecrest, Florida
- 2 Park Forest, Illinois
- 3 Broward County, Florida

As part of this STAR benchmarking process, the Project Management Team evaluated the City based upon 526 STAR indicators within the realms of:

Climate & Energy
Built Environment
Economy & Jobs
Education, Arts & Community
Equity & Empowerment
Health & Safety
Natural Systems

Background



Each of the 526 STAR indicators are tied to a specific point value. Cities that receive a STAR score between 200-399 points are eligible for a 3-STAR ranking. Cities that receive between 400-559 points are eligible for a 4-STAR rating and communities that score above 600 points are eligible for a 5-STAR rating.

For a more detailed breakdown of the STAR process please visit starcommunities.org.

The results show that Hallandale Beach is comparable to its regional peers who are committed to sustainability, with the potential to earn a 3-STAR rating. The City out paces its peers in some areas of the assessment (Education, Arts & Community and Equity & Empowerment) and has room to improve in others. There is a limit to how well the City is able to score in natural systems, as the City is largely urbanized.

The lessons learned from establishing this sustainability baseline and the process of benchmarking the City against its peers have been incorporated throughout this plan. See the Appendix for greater detail on this baseline and benchmarking effort.

ENGAGEMENT

A plan without proactive people is an empty promise. As part of the SAP process, the Project Management Team worked with 25 representatives from every City department to establish a sustainability vision, set goals and develop a portfolio of cost-effective sustainability projects. Through collaborative meetings and workshops, staff became familiar with the City's baseline performance and the achievements of peer cities. They were trained to imagine a desired level of future performance, then determine the incremental steps necessary to achieve it. Fourteen realistic goals for the six focus areas were established. This process helped focus staff on developing projects designed to achieve these goals. For each project, staff helped calculate expected reductions in resource use and also estimated the contribution of each project to the Plan's stated goals. Project funding requirements were also calculated. Benefits, such as avoided costs or new revenues, ROI and Net Present Value (NPV), were projected in order to support the City's decision makers in prioritizing limited resources. Project managers and schedules have been identified to ensure accountability throughout the project life.

The SAP Project Management Team also facilitated two community workshops designed to engage citizens and obtain their input for the SAP. Approximately two dozen community members attended these workshops. Participants were briefed on the City's baseline and benchmarks as well as the City's preliminary sustainability vision,

project portfolio and goals. Attendees voted on actions they would like the City to take, drawn from the City's preliminary STAR assessment. The attendees provided valuable input that has been incorporated into the plan.

The results from these workshops can be found in the Appendix.

RESULTS

This SAP contains a portfolio of sustainability projects that will generate a net return of nearly \$2.2 million, while expanding public services and enhancing environmental stewardship. These returns will come from reducing energy, water and fuel use and improving recycling. The portfolio also includes projects designed to: engage employees; conduct outreach to residents, improve mobility; quantify and mitigate greenhouse gas (GHG) emissions; identify vulnerabilities to climate change; improve resilience; and finance and evaluate sustainability projects.

Some of the notable project examples (with 10-year projected net present value in parentheses) include:

- Increasing the City's recycling rate (\$1 million)
- Transitioning some City departments to an expanded service hour work week model (\$765,000)
- Right-sizing the fleet (\$447,000)
- Expanding reuse water irrigation (\$148,000)
- Improving HVAC control systems (\$174,000)

While not all projects have a positive ROI in economic terms, all have significant benefits to the community. The project portfolio is designed so that projects with high financial returns help fund those that are advantageous for other reasons. Simply stated, not all sustainability and resiliency projects should be required to individually pass a purely economic test. This study includes a package of programs – all of them are important.

The next step is to implement these projects through the City's legislative and administrative processes. The City plans to use social media, meetings and other means to communicate the benefits of the SAP and achieve community support. The City will measure its performance and report results. Lessons learned will be incorporated into periodic updates of the City's operational performance. Goals will be revisited and new projects will be added to the portfolio in order to meet evolving expectations, take advantage of new technologies and foster partnerships. The City plans to reinvest in these new opportunities, as financial returns are realized, and will also leverage external sources of funding.

Background



Vision

Vision is the embodiment of what an organization aspires to be and is a catalyst for successfully moving in the direction of stated goals. Thus, it is a fundamental aspect of sustainability in Hallandale Beach and serves to clearly communicate and guide the City’s direction. The Vision establishes the guidelines for the sustainability and resiliency programs, and helps keep the City on the approved course.

The City will be guided by a vision of sustainability that expresses the importance of sustainability to residents, businesses and visitors. The sustainability vision statement was developed over several months with multiple rounds of input from 25 City staff members. A key to this vision statement includes the idea that the City must serve as an example of excellence in each of the six SAP focus areas and that the boundaries of decision making be expanded beyond just the short term to include guidance for those that will inhabit the City in the future.

TABLE 2: CITY OF HALLANDALE BEACH SUSTAINABILITY VISION

The City of Hallandale Beach will lead in raising awareness, reducing waste and pollution and implementing clean technology and infrastructure – while generating measurable, cost effective and enduring economic, social and environmental benefits – to improve the quality of life in our resilient coastal community now and into the future.

The Vision establishes the guidelines for the sustainability and resiliency programs and helps keep the City on the approved course.



Vision

Create < Vision



Goals

The City's systematic approach to sustainability is supported by a commitment to protect and enhance the environment, improve community quality of life and generate positive returns on investment.

To realize this vision of sustainability excellence, the SAP recommends 28 short-term and long-term goals in each of the plan's six focus areas.

SHORT-TERM GOALS

Short-term goals are meant to be accomplished within a five-year span through implementing the projects detailed in this plan. As the City

implements its sustainability program, it will monitor performance relative to these goals. The year 2016 will be the baseline year for measuring progress. The City will strive to continually improve its performance while remaining vigilant for new risks and opportunities.

The 14 short-term goals, organized by focus area, are shown below (Table 3).

Goals

TABLE 3: HALLANDALE BEACH SHORT-TERM SUSTAINABILITY GOALS

BY 2022	RESOURCE CONSERVATION & EFFICIENCY  Reduce electricity consumption of City operations by 15% Reduce potable water consumption of City operations by 20% Displace 10% of gasoline / diesel fuels with fuel efficiency or alternative fuels	MATERIALS MINIMIZATION & RECYCLING  Achieve a 30% diversion rate from recycling and composting Reduce total waste from City operations by 5% through source reduction	LAND USE & TRANSPORTATION  Establish targeted green building standards for new public, commercial and multifamily buildings and infrastructure Increase existing percentage of the bicycle/pedestrian network that attains Level of Service B or better by 10% annually
	NATURAL RESOURCES & RESILIENCY  Complete a vulnerability assessment and adaptation action plan Improve the City's Community Rating System classification to 5 Complete a dune management plan	EDUCATION & OUTREACH  Train and achieve commitment from 100% of employees to understand and contribute to sustainability initiatives Develop a sustainability communications plan	FUNDING & EVALUATION  Fund sustainability action plan projects with 50% internal funds, 50% external funds (grants and developer contributions) Measure and monitor 50% of 19 sustainability key performance indicators

*The contribution of certain projects to goals marked with an asterisk cannot be calculated at present. As projects and project ideas are developed further their contributions will be calculated.

Goals

LONG-TERM GOALS

Long-term goals reflect the City’s aspiration to build a resilient coastal community by the year 2040. This SAP is the first step towards defining what a resilient coastal community can be. Looking deeper into the future, this SAP is freed from the finite details of the present and enabled to imagine new, better ways of living and working together. Likewise, these long-term goals go beyond the foundation built by accomplishing short-term goals. These goals are aspirational and can be expected to

change as the future unfolds. For this reason, the SAP is intended to function as a living document, capable of growing to encompass the promise of these long term goals, while managing the inevitable outcomes of climate change.

The 14 long-term goals, organized by focus area, are shown below (Table 4).

Goals

TABLE 4: HALLANDALE BEACH LONG-TERM SUSTAINABILITY GOALS

BY 2040	RESOURCE CONSERVATION & EFFICIENCY	 <p>Reduce electricity consumption for City operations, commercial and residential sectors by 40%</p> <p>Reduce potable water consumption for City operations, residential and commercial Sectors by 40%</p> <p>Displace 90% of gasoline/diesel fuels with fuel efficiency or alternative fuels</p>	MATERIALS MINIMIZATION & RECYCLING	 <p>Achieve a 75% diversion rate from recycling (45%) and composting (30%)</p> <p>Reduce total waste from City operations by 20% through source reduction</p>	LAND USE & TRANSPORTATION	 <p>Establish standards for existing public, commercial and multifamily buildings and infrastructure; all eligible structures will meet the City’s standards</p> <p>Achieve a balanced transportation system with no single mode having more than 30% of total trips</p>
	NATURAL RESOURCES & RESILIENCY	 <p>Implement the vulnerability assessment and adaptation action plan</p> <p>Improve the City’s Community Rating System classification from a 5 to a 4</p> <p>Restore dunes along all beaches</p>	EDUCATION & OUTREACH	 <p>Require all employees to contribute to a sustainability project</p> <p>Involve 80% of full-time residents in the City’s sustainability initiatives, resulting in national recognition</p>	FUNDING & EVALUATION	 <p>Fund Sustainability Action Plan projects with 20% internal funds, 80% external funds, including revolving funds</p> <p>Measure and monitor 100% of 19 key performance indicators</p>



Action

Action

To achieve the productivity and quality of life benefits associated with sustainability, each of the City's departments has participated in a top-to-bottom review of its operations to identify opportunities for continuous improvement. In developing this strategy, the SAP team has been guided by a commitment to reduce consumption, minimize waste, cultivate community and ensure the availability of resources for the benefit of future generations.

The goals and projects identified in this plan will yield significant environmental benefits for the City. The projects are based in a commitment to improve the quality of life for our residents and to collectively generate a positive net return on investment for the City and its stakeholders.

To fulfill the City's commitment, the team has developed a portfolio of 27 projects across six focus areas. Together, the projects have the potential to generate nearly \$2.2 million in net benefits to the City, while extending new services to citizens and protecting the environment.

This is just the beginning. To achieve its long term goals, this plan must grow and evolve. The SAP Project Management Team has identified a

significant number of the future actions the City should take to build a resilient coastal community for future generations. More importantly, City employees and citizens will be empowered with a strategic sustainability planning process and action program that will allow them to continue to develop green initiatives and to improve the community going forward.

Implementation of projects will begin in FY19 with the aim of accomplishing the City's five-year goals. Since most projects include benefits that stretch beyond five years, their benefits to the City have been calculated over a 10-year time frame. As this plan evolves, new projects will be identified and implemented, moving the City closer to achieving its long-term goals.

Table 5, on the following page, outlines the projects the SAP team has developed and includes projected net economic benefits over 10 years. Net benefit is the result of subtracting required investment from expected benefits. The investment needed is also shown. Most projects show a positive net benefit, meaning that project benefits exceed project costs. While some projects show a negative net benefit, as a whole, the portfolio of projects is estimated to generate a return on investment of 52%, paying for itself in six years.



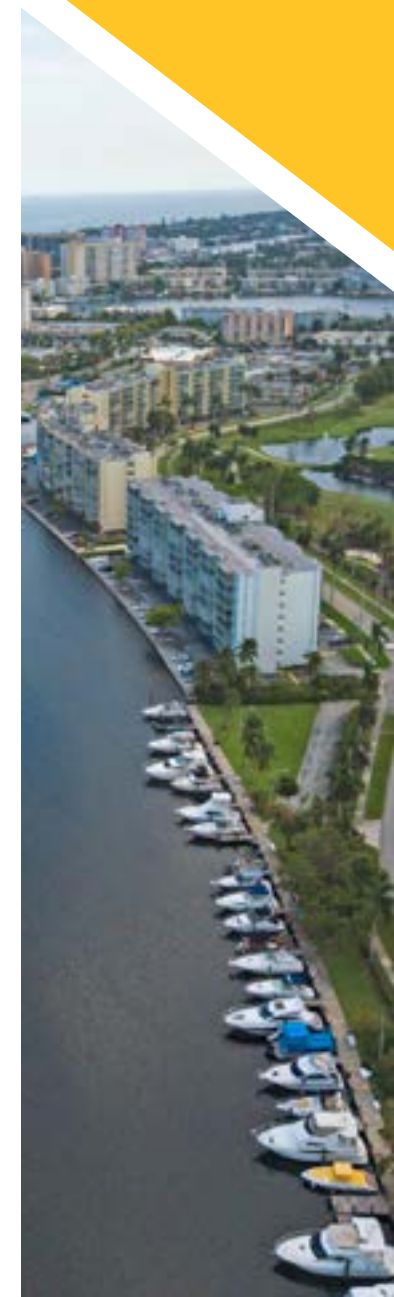
TABLE 5: HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT PORTFOLIO

Project Name	Net Benefit
LED Streetlights	\$78,000
LED Interior Lighting	\$24,000
Solar Thermal Systems	-\$21,000
Existing City Building Commissioning	\$124,000
Electric Vehicles & Infrastructure	\$90,000
Increase Fuel Economy	\$118,000
Indoor Water Fixtures & Fittings Efficiency	\$19,000
HVAC controls	\$174,000
Right Size Fleet	\$447,000
Expand Reuse Water Projects	\$148,000
Expanded Service Hours Work Week	\$765,000
Irrigation Efficiency	-\$7,000
Increase Community-wide Recycling	\$1,066,000
Green Purchasing Program	\$12,000
Composting Feasibility Assessment	-\$48,000
Bikeshare	\$0
Build-out Bicycle & Pedestrian Infrastructure	-\$660,000
Develop a Vulnerability/Adaptation Assessment	-\$82,000
Dune Protection Plan	\$0
Low Impact Development Standards	\$0
Integrate Sustainability into Employee Training	\$2,000
Communications Plan	\$0
Develop Green Event Policies	\$0
Utility Management System	\$19,000
Revolving Fund	\$0
Complete a Greenhouse Gas Inventory & Set Reduction Targets	-\$24,000
STAR Communities Certification	-\$13,000
TOTAL	\$2,231,000

Net benefit is the benefit remaining after all costs have been recouped. The Project Team anticipates that these projects will accomplish the majority of the SAP's five-year goals (Figure 1). As next steps are taken, goals will be fully attained.¹

¹ The contribution of projects to the SAP's Source Reduction, Development, Transportation, Flood Hazard and Funding goals cannot be calculated at present. As projects and project ideas are developed further their contributions will be calculated.

Action





Action

The following sections of this plan explain the importance of each focus area to the community and provides a brief snapshot of the City's performance to date and its future goals.

Next, the Plan defines the projects that will be implemented over the next 10 years to achieve the City's goals.

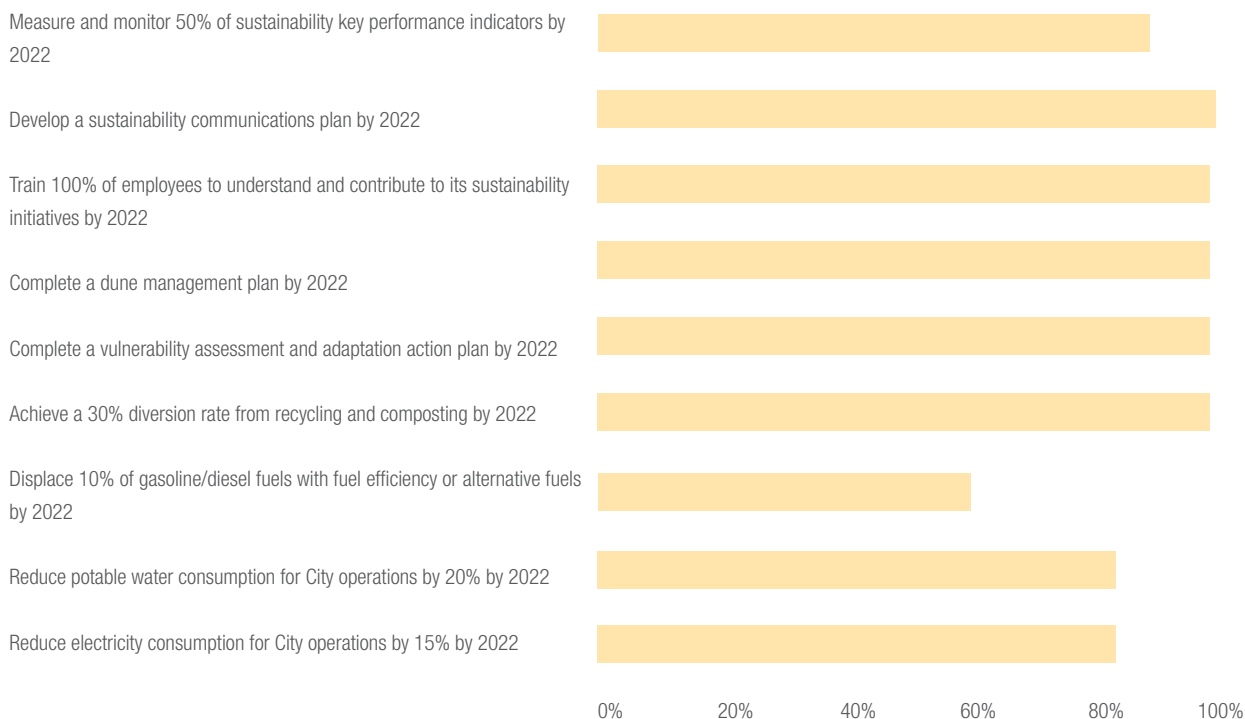
The NPV and ROI have been estimated for each project. Both NPV and ROI are ways of comparing the financial benefits of projects. NPV compares the difference between the costs and the benefits of a project over time. The greater the positive difference, the greater the financial benefit to the community. In addition, NPV favors projects that benefit the City sooner rather than later. ROI measures the ratio of project's benefits to its cost expressed as a percentage – the higher the ROI, the better.

In addition to these financial metrics, this Plan estimates how much each project will contribute to the City's specific goal, where feasible. This is expressed as a percentage of each goal. Again, the closer to 100% goal attainment the better. Figure 1 illustrates quantifiable contributions of planned projects to nine of 14 goals. Contributions of projects to the remaining goals will be quantified as further data becomes available.

The lead department and project manager that will be responsible for implementing the project is identified.

Each focus area section also indicates next steps the City could take to extend the plan into the future by adding new projects and continually improving performance.

FIGURE 1: PROJECT CONTRIBUTION TO FOCUS AREA GOALS





Action

LED STREETLIGHTS

- NPV: \$78,000
- ROI: 58%
- Contribution to Goal: 12%
- Lead Department/Division: Public Works
- Responsibility: Operations Manager

LED INTERIOR LIGHTING

- NPV: \$24,000
- ROI: 41%
- Contribution to Goal: 11%
- Lead Department/Division: Public Works
- Responsibility: Operations Manager

SOLAR THERMAL SYSTEMS

- NPV: -\$21,000
- ROI: -63%
- Contribution to Goal: 1%
- Lead Department/Division: Public Works
- Responsibility: Operations Manager

EXISTING BUILDING COMMISSIONING

- NPV: \$124,000
- ROI: 96%
- Contribution to Goal: 11%
- Lead Department/Division: Public Works
- Responsibility: Operations Manager

HVAC CONTROLS

- NPV: \$174,000
- ROI: 136%
- Contribution to Goal: 4%
- Lead Department/Division: Public Works
- Responsibility: Operations Manager

EXPANDED SERVICE HOURS WORK WEEK

- NPV: \$765,000
- ROI: ∞*
- Contribution to Goal: 44%
- Lead Department/Division: City Manager's Office
- Responsibility: Deputy City Manager

*For projects with low or no cost, the return on investment is mathematically infinite, denoted by the symbol: ∞

RESOURCE CONSERVATION & EFFICIENCY - ENERGY

Infrastructure old and new, requires energy for safety, comfort and productivity. That energy – primarily derived from natural gas, nuclear power, coal and oil – affects pocketbooks, natural places and personal health. Pollution from using these resources increases health risks and destabilizes the climate.

Local, renewable energy sources provides a safe alternative to risky and polluting resources. Conservation and efficiency represent the best options because the cheapest and cleanest form of energy is the energy we avoid using through the recommendations included in this SAP.

The City of Hallandale Beach has begun reducing its energy use and aspires to produce some of its own energy with renewables in the future. The stated goal is to reduce operational electricity use by 20% by 2022, using a 2016 baseline. Translated to dollars if this policy is achieved, over \$200,000 would be saved annually by 2022 over the baseline.

The primary source of power used community-wide in Hallandale Beach – with the exception of automobiles – is electricity. In 2016, the entire Hallandale Beach community (City operations and external, community-wide operations) spent over \$51 million on 492 million kilowatt hours of electricity. Power use in the City has grown four percent since 2014, while expenditures have decreased by four percent, reflecting a reduction in the cost of electricity.

More work remains to help improve the way the community uses energy – local governments have a role to play in getting it done. The City offers free LED luminaires and smart power strips to residents. Residents have access to Property Assessed Clean Energy Financing, which offers up-front capital for energy efficiency and renewable improvements. The East Broward Solar Co-Op recently offered cooperative purchasing of solar energy to Hallandale Beach residents. Through the Comprehensive Plan (CP), the City is committed to enforcing the Florida Building Code, in particular the Energy Code, which is one of the strongest in the nation. This commitment is furthered by the City's Green Building Program, which establishes minimum standards for energy efficiency in large commercial and multifamily new construction projects.



PROJECTS

The SAP team has identified six energy projects aimed at reducing the City's dependence on certain fuels, including LED Streetlights, LED Interior Lighting, Solar Thermal Systems, Existing Building Commissioning, HVAC Controls and Expanded Service Hours Work Week. These projects are expected to yield a discounted net benefit of over \$1.1 million over the next ten years, and achieve 84% of the 2022 energy reduction goal. As the City implements these projects, it expects to encounter additional opportunities to reduce consumption and fulfill the stated goal.

LED STREETLIGHTS

Rapid changes in the availability and cost of LED lighting has resulted in the potential to significantly reduce the energy intensity of certain lighting applications, such as street lighting. LED lights are more efficient than their high intensity discharge (HID) counterparts. The City has utilized exterior LED lighting on a pilot project basis, for example, exterior lighting at the City Hall Complex. Now the target is to replace all of the City's approximately 386 City-owned streetlights with LED lighting. LED lighting owned by FPL is currently being replaced under an agreement with the utility. These retrofits began in February of 2018 and will be completed in May/June of 2018.

Currently, the City-owned streetlights consume 470,000 kWh of electricity annually at a cost of about \$75,000 per year. These streetlights will be replaced with LEDs of similar aesthetics and performance.

The delivery method is yet to be determined, since options to enter into a public-private partnership exist for such projects. However, for planning purposes, this project assumes traditional project delivery with an upfront cost of about \$193,000 phased over three years.

Benefits of this project include avoiding the electricity consumption associated with the current, less efficient fixtures and lamps. An average energy and cost savings of 40% is projected. Savings also include avoided maintenance costs based on a weighted average resource rate of \$0.16 per kilowatt hour sourced from historical FPL billings that include electricity and maintenance costs. Benefits do not include commercial energy efficiency rebates that may be available from FPL.



RESOURCE CONSERVATION & EFFICIENCY - ENERGY

As a government, the City spent approximately \$894,000 on about 10,200 megawatt-hours (MWh) of electricity to power government facilities and infrastructure in 2016. Like the community as a whole, City government power use has increased by eight percent since 2016, while expenditures have decreased by nine percent. This decrease in cost is not guaranteed in the future and a continual increase in power derived from non-renewable sources of energy will result in a larger impact on our climate and planet. Furthermore, the full cost of energy extraction is not included in the price that the consumer pays. This leads to a greater amount of environmental destruction than would otherwise occur if the market were to properly value externalities. As a vulnerable coastal community, Hallandale Beach should lead by example and reduce its energy consumption.

In recent years, the City has undertaken several initiatives to improve the energy efficiency of its operations. In 2014, the City entered into a performance contract with Siemens, which attracted about \$660,000 in private investment in lighting efficiency improvements in City facilities. A performance contract provides upfront investment in energy efficiency projects. It guarantees projected savings and is structured so that savings help pay for the investment overtime. The City recently reached an agreement with FPL to replace over 1,600 existing streetlights with energy efficient LED luminaries. This will result in an energy savings of more than 400,000 kilowatt-hours (kWh) per year and a reduction of about 280 metric tons of greenhouse gas emissions per year – equivalent to removing 37 homes from the grid or removing 60 cars from the road. The project will be completed by the middle of 2018.



Action



LED INTERIOR LIGHTING

As with streetlights, LEDs can significantly reduce lighting energy use inside City facilities. With this project the City aims to replace about 7,000 existing T8 fluorescent lamps with more efficient, longer-lasting LEDs.

In 2014, as part of a performance contract with Siemens, interior lighting was upgraded to the most efficient fluorescent lamps available at the time. The contract stipulates that the City remain responsible for maintenance of the luminaries and fixtures until 2029. By 2021, these lamps will be about seven years old and many will be beginning to fail. Replacing them with LED lamps and disconnecting existing ballasts will save about 30% of energy use, cost and will significantly reduce ongoing maintenance. This is due to the fact that LED lamps will last at least twice as long as those being replaced.

SOLAR THERMAL SYSTEMS

Replacing electric or natural gas powered water heaters with solar water heaters can be cost effective in applications where the demand for hot water is high.

Fire and police stations are often good candidates for solar thermal systems, since they are staffed around the clock and equipped with full bathrooms and kitchens. Fire stations across Florida, including Jacksonville and Boynton Beach, have installed solar thermal systems to provide a large fraction of total hot water demand. Hallandale Beach's new Main Fire Station, currently under construction, will feature a solar thermal system.

This project aims to expand the use of solar thermal systems in the City and will reduce annual energy consumption for water heating in Fire Station 7, Fire Station 60, Fire Station 90 and the police building by 93% annually. These facilities are assumed to have high hot water consumption, resulting from showering, dish washing, clothes washing, etc. Vehicle wash systems in use at the City that use hot water are also good candidates for solar thermal systems, but are not presently included in the project.

The project will involve procurement of design and construction services for small, roof-mounted, solar thermal systems at each location. Costs include professional services to complete the system design and construction and are estimated at \$35,000. Benefits are based on reducing electric consumption. Benefits beyond year 10 are not captured.

Positive ROI is not achieved within 10 years, however, the life of the systems is about 30 years and the project may be expected to pay for itself within that time period.

EXISTING BUILDING COMMISSIONING

Existing Building Commissioning (EBCx) is a systematic process for investigating, analyzing and optimizing the performance of building systems through the identification and correction of deficiencies. The process verifies that the building and its systems meet current requirements, improves energy and water performance, resolves operations, controls and maintenance problems, reduces or eliminates occupant comfort complaints, improves indoor environmental comfort, and documents system operations. For all of these reasons, EBCx is widely recognized as among the most cost-effective energy efficiency solutions available.



This project will involve EBCx for the City's largest and most complex facilities, including the City Hall Complex (City Hall, Police, and Cultural Center), OB Johnson, Foster Park and the Public Works Administration Buildings. An investment-grade energy audit conducted in 2014, and facility walk-throughs conducted in 2017 and 2018, indicated that the City's major facilities could benefit greatly from EBCx. Typically electric savings of about 15% are possible, in addition to, water conservation, thermal comfort and maintenance savings. Professional services will be procured and the City will implement all low-cost/no-cost and selected capital-intensive recommendations identified by the process.

Best management practice recommends re-commissioning key facilities on a regular cycle to maintain a high level of performance, while capturing new opportunities to improve operations. This project plans for one cycle of re-commissioning based on a five year period.

Professional commissioning services costs are estimated at \$0.50 per square foot. An additional investment of about \$30,000 is estimated to implement corrective actions identified by the process. A Lawrence Berkeley National Laboratory meta-study found typical simple investment payback in commissioning averages 1.8 years with a range of 0.5-3.5 years. The project conservatively estimates a 2.8 year payback period.



Action



Build < Happiness



Action

HVAC CONTROLS

Building automation systems (BAS) save energy by monitoring, scheduling and operating major building systems, such as heating, ventilation and air conditioning, via an electronic network of computers, sensors and mechanical actuators. Scoped appropriately for the medium- to small-sized buildings operated by the City, BAS can cost-effectively reduce energy use by 10 – 30%.

An investment-grade energy audit conducted in 2014 and a facility walk-through conducted in 2018, indicated that most of the City's HVAC systems operate 24 hours per day, seven days a week, regardless of occupancy or utilization. This project aims to save 14% of total electric billings by updating the BAS at the City Hall Complex to a modern, digital system with a software front end capable of remotely monitoring and controlling systems across the City. Controllers and actuators at the City Hall Complex will be upgraded as necessary. Networked rooftop unit (RTU) controllers, networked programmable thermostats, networked sensors and associated electrical equipment will be installed at the Cultural Center, Fire Station 60, Fire Station 90, Hepburn Center, DPW Compound, Golden Isles Tennis Center and Foster Park. Smaller, simpler buildings will install a networked thermostat. The networked BAS will be periodically re-commissioned to ensure proper operation.

The estimated cost for installation and configuration of a BAS, including software, controls hardware and wiring, is estimated at \$220,000. Implementation will take place over two years, beginning in 2019 at the City Hall Complex and completing additional sites during 2020. Savings are estimated at about \$380,000 over 10 years.

EXPANDED SERVICE HOURS WORK WEEK

One of the obligations of public service is to maximize the efficiency of public expenditures. Expanded service hours allows the City to meet or exceed current levels of service, while realizing significant savings in operational expenses and increases in employee satisfaction.

This project would strategically transition some aspects of City operations to an expanded service hour work week model. Under this model work schedules shift from a five-day week to a four-day week. During those four days, the hours of service provided are extended, providing a greater window of access to citizens.

There are currently nine cities in Broward County, as well as some divisions of Broward County, that operate within an expanded service hours work week model, including Coconut Creek, Margate, Tamarac, Lauderdale Lakes, Lauderdale, Wilton Manors, Pembroke Pines, Miramar and Hollywood. Non-Broward cities that operate this schedule include Miami Beach, Miami Gardens, Wellington and West Palm Beach. Hollywood, Margate and Tamarac, have transitioned to such a schedule and documented significant savings in water, energy, fuel, overtime and sick leave usage expenditures. Furthermore, a recent article published by Excellence in Government stated that there are three key factors that allow a government organization to attract and retain young talent. One of these factors is the presence of a flexible work arrangement. The private sector is also beginning to incorporate such arrangements. Richard Branson, the CEO of Virgin, espouses this philosophy. In a recent Freakonomics podcast he stated that many American companies lack the capacity to motivate people, which translates to low productivity. He believes that flexible work arrangements build trust with employees and employees in return will give more of themselves to their place of work.

To consider in detail the transition to an expanded service hour work week model, staff will compile a report on the results achieved by peer cities. Citizens and staff will be surveyed to gather their input and gauge their receptiveness. A potential program design based on peer data and survey results will be presented to the City Manager for consideration. Extensive outreach to residents and businesses will be necessary in order to increase awareness of potential changes in City hours of operation. Staff education may be necessary, depending on what type of system the City adopts.



Action

For example, if the City adopts a four-day work week it must ensure that all staff adhere to the policy in order to achieve expected savings and complete work tasks. It may also be that certain departments will benefit because of the department's infrequent public contact and others cannot make this transition because of the need to meet the public seven days per week.

The key to this project is gaining flexible control of the City's major building systems. Accomplishing this is discussed above in Project RC8. HVAC Controls.

The expanded service schedule has the potential to save close to \$900,000 over 10 years from energy, water and fuel savings alone. A similar amount of savings from avoided overtime and sick leave may also be possible. However, because less certain, these latter benefits are not included in estimates at this time. Estimated cost savings are based on those reported by Hollywood, FL and Miramar, FL after those cities transitioned to an expanded service hours format. These two cities realized about \$460,000 and \$410,000 per year in avoided water, electricity, fuel, overtime and sick leave usage, respectively. Savings are conservatively estimated at 42% and 66% of this level, respectively, then averaged, given the ratio of Hallandale Beach's employees to Hollywood (1,271) and Miramar (806).

Further, employee satisfaction in the City of Hollywood has shown significant improvement since the transition. The number of employees reporting that they were "very happy" increased by 41% and employees rating their emotional/mental condition as "extremely high/high" increased by 14%, while those that rated their emotional/mental condition as "low and extremely low" decreased by 42%. Similar increases in employee satisfaction, leading to improved employee recruitment and retention, can be expected in Hallandale Beach.

This proposed project showcases that sustainability initiatives have the capacity to provide positive benefits to the environment, economy and society.



FUTURE STEPS

The City will continue identifying opportunities to cost-effectively use energy more efficiently and generate energy from renewable resources. **Some initial directions for future projects include:**

HIGH PERFORMANCE HVAC UPGRADES

The City should purchase and install premium efficiency equipment when replacing heating, ventilation and air conditioning (HVAC) units currently in “poor” condition. Premium efficiency equipment can be defined as HVAC equipment with efficiency ratings beyond the minimum required by the Florida Building Code. For example, for split system HVAC units, code requires a minimum Seasonal Energy Efficiency Rating (SEER) of 14. Paying the relatively low incremental cost for a 16 SEER unit can produce energy savings far in excess of the extra upfront cost over the 10 – 20-year life of the unit. The cost of service for HVAC units typically increases with age. Therefore, accelerating the rate of unit replacement for those reaching the end of their useful life can also reduce annual maintenance expenditures. The City is currently investigating options for upgrading HVAC equipment at the Department of Public Works Compound, including the Administrative building, Generator Electrical Room, Pump Room High Service and the Water Treatment Plant.

MOTOR EFFICIENCY UPGRADES

The City operates a water plant with several large pumps, as well as nine pump and 15 lift stations. These pumps are a major contributor to utility energy consumption, the City’s single largest category of electricity consumption. Use of premium efficiency motors (standardized by the National Electrical Manufacturers Association) as replacements for older models can increase efficiency by three to six percent, resulting in significant savings for motors with large load factors. Older, general-purpose, low-voltage motors between 10 and 500 horsepower and in service more than 25% of the time are good candidates for replacement upon repair or failure. Variable frequency drives (VFDs) may be installed on larger motors where constant volume is not required. Savings from 10 to 60% are possible if the fan or pump is designed to operate between 40 to 80% of full speed, typically resulting in quick ROIs. Currently, high service and transfer pumps are being replaced. Staff at both the water plant and in Public Works have expressed interest in utilizing VFD and detailed studies will occur as replacements are needed.

ATHLETIC FIELD LIGHTING EFFICIENCY AND CONTROLS

The City operates several athletic fields lit at night by high mast, high-intensity discharge flood lamps. These fixtures use a large amount of energy, are expensive to maintain and introduce light pollution into surrounding areas. LED technology is now available for such applications. LED technology will reduce energy use, maintenance costs and, because the light supplied is far more directional, light pollution. The installation of control systems that

would allow staff to schedule and automate lighting remotely would lead to substantially reduced expenditures on athletic field lighting and improve the quality of life of neighbors.

EFFICIENT GLAZING

Energy efficient window technologies, including low emissivity glazing, exterior coatings, and interior or exterior shades can reduce the solar heat gain in buildings, reducing the energy required to cool interiors and increasing occupant comfort. In new buildings, or in existing buildings where windows will be replaced, efficient glazing will be specified as part of a design guideline. Where existing windows will remain in place for the foreseeable future, solutions such as exterior coatings or interior/exterior shades as options will be investigated. A pilot project could be developed for a specific building or exposure, in which a product could be tested by monitoring electric consumption pre and post treatment

SOLAR POOL HEATING

Hallandale Beach operates several swimming pools. Utilizing solar energy to heat the pools is a potential cost saving alternative to electric or natural gas heat. Solar pool heaters use the pool’s existing filtration pump to move water through polypropylene plastic collectors that are mounted to a south facing roof and back to the pool. A solar thermal pool heating system installed on a 3,640 square foot pool at the University of South Florida, St. Petersburg resulted in \$10,000 in savings the first year, with a 3-year simple payback period.

SOLAR PHOTOVOLTAICS

Solar photovoltaic (PV) systems collect solar energy and convert it to electricity for use in buildings and other applications. PV modules are typically installed on a south-facing roof or installed in ground-based arrays. Power generated by the modules is converted from DC to AC current via integrated or centralized inverters. Commonly, the power generated is utilized immediately, with any excess sent to the grid. Batteries may be used to store extra power. However, batteries increase the cost of PV systems significantly. The cost and efficiency of solar photovoltaics, utilized to generate electricity by collecting solar energy, continues to decrease year after year. Nevertheless, its applicability in the State of Florida is limited by regulatory barriers. Further, many of the financial incentives provided by the federal government to encourage adoption of solar technologies are not available to tax-exempt entities like the City. Nevertheless, innovative financing and ownership models that have been utilized in the state may enable the city to pilot use of solar power. For example, the City of Orlando has installed a large (420kW) solar PV array on the roof of its fleet garage. The project was enabled via a power purchase agreement (PPA) with its municipal utility, whereby the utility leases city roof area and installs, operates and owns the PV array. The city pays the utility only for the solar power produced by the roof-top array at a fixed rate over an extended period of time. Many cities in Florida have implemented solar projects without such methods, choosing to install and operate PV systems using city funds, sometime supplemented by grant funding. In these cases, the financial performance of the project may suffer.



Action





Action

RESOURCE CONSERVATION & EFFICIENCY - WATER

One of the defining characteristics of Hallandale Beach is its water. Keeping the City's waterways clean and healthy is a priority. Meanwhile, Hallandale Beach's drinking water resources, like the rest of South Florida, are increasingly stressed by population growth, saltwater intrusion and changes in the frequency and intensity of precipitation.

The City operates a water utility that provides water to nearly all areas within its limits. It receives a water withdrawal allocation from the South Florida Water Management District (SFWMD). This allocation limits the amount of water that the City can withdraw from the aquifer via its wells. The City's permit expires in 2033 and it is not known if the future permitted allocation will remain constant or if it will include an increase or decrease. It is in the best interest of the City to replace or reduce its potable water usage as much as possible.

Since 2007, the City has experienced significant reductions in water consumption, due to water restrictions imposed by the SFWMD. More recently, however, community water consumption (internal City operations and external community-wide operations) in Hallandale Beach has increased by six percent. This is partially due to population increase, but per capita consumption has grown by three percent since 2014. The importance of stewardship of the City's water resource is underscored by a projected addition of more than 3,000 residential units over the next 10 years.

In FY 2016, City facilities used 4.26 million gallons (MG) for indoor uses and 18.42 MG for irrigation, at a cost of \$66,000 respectively. Water use in City facilities shows a declining trend from 2014 to 2016.

The City has long recognized that conserving drinking water resources and managing storm water can cut costs and meet demand without compromising natural systems. Water customers are charged an increasing block rate for consumption and, through a partnership with Broward County, the City offers rebates and permit fee waivers for low-flow toilets. Ultra-low flow fixtures are required for new construction, irrigation is restricted to once per week, and xeriscaping using native plants and use of reclaimed water are encouraged. The City operates a water utility leak-detection program, analyzing, replacing and calibrating meters on a regular schedule. As a result, the City has achieved an estimated system loss of four percent, well below the 10% allowed by the SFWMD. Utility staff have been working to reduce inflow and infiltration (I&I) associated with its storm water system for over two decades. The City participates in Broward County's NatureScape program, which encourages water efficient landscaping practices. Through this program the City has saved 10 million gallons and \$13,500 per year at City facilities and parks. The program does not include landscaping in roadway medians.



INDOOR WATER FIXTURE AND FITTINGS EFFICIENCY

- NPV: \$23,000
- ROI: 131%
- Contribution to Goal: 19%
- Lead Department/Division: Public Works
- Responsibility: Operations Manager

IRRIGATION EFFICIENCY

- NPV: -\$7,000
- ROI: (3%)
- Contribution to Goal: 61%
- Lead Department/Division: Public Works
- Responsibility: Operations Manager

EXPAND WATER REUSE PROJECTS

- NPV: \$148,000
- ROI: 45%
- Contribution to Goal: 5%**
- Lead Department/Division: Public Works
- Responsibility: City Engineer

*For projects with low or no cost, the return on investment is mathematically infinite, denoted by the symbol: ∞

**Since this project benefits both city operations and community water use, contribution to goal is calculated relative to the SAP's 2040 Goal of reducing community water use by 40%.

PROJECTS

This SAP's goal is to reduce total operational water use 20% by 2022 from our 2016 baseline. The City will begin by implementing three projects projected to achieve 84% of its initial goal: Indoor Water Fixture and Fittings Efficiency, Irrigation Efficiency and Expand Reuse Water Projects. Looking to the future, the City will strive to reduce total drinking water consumption for both City operations and the community by 40% by 2040. There are several next steps the City can take to move towards this goal.

INDOOR WATER FIXTURE AND FITTINGS EFFICIENCY

High-efficiency plumbing fixtures or fittings can be easily incorporated into existing City-owned buildings. While replacement of fixtures is sometimes necessary, in most cases reduced-flow accessories (e.g. flow restrictors, flow regulators, aerators and laminar flow devices) can be added to existing fixtures. For lavatory and kitchen faucets, fixtures or accessories specified with a maximum flow of about 0.5 and 1.0 gallons per minute (gpm), respectively, will save water relative to standard fixtures. For showers, 1.5 gpm fittings will be specified. Lower-flow fixtures and fittings are also available and may be appropriate in certain cases. Reducing flow rates of fixtures that supply hot water will also save energy required to heat water.

Indoor water use may also be significantly reduced by utilizing high efficiency toilets and urinals. At minimum, 1.28 gallons per flush (gpf) models for toilets and 1.0 or less gpf urinals replace 3.5 gpf fixtures/bowls and valves. While retrofits are usually less effective than replacement, retrofits may be made to toilets that allow a "dual flush" mode.

A 2014 audit of City facilities indicated that most fixtures/fittings were not low-flow. This project aims to systematically upgrade fixtures at all major City facilities. Staff will accomplish this by incorporating low-flow devices into designs for upcoming major renovations. Fixtures in remaining facilities will be audited and a schedule for replacement will be developed. As part of these efforts, a design standard for water fixtures in City facilities will be developed.

The project will reduce annual water consumption by about 20% by 2022 in targeted buildings. This will help achieve about 19% of the City's 2022 water conservation goal. Implementation costs are estimated at \$22,000. Investment is expected to be phased over two years. Benefits amount to about \$50,000 over 10 years. Benefits result from both water and electric utility savings. This is because energy is used to heat water, this reduction in water consumption will result in an associated reduction in energy used.



RESOURCE CONSERVATION & EFFICIENCY - WATER

Ocean outfall of wastewater will no longer be allowed in Florida by 2025. Therefore, cities with wastewater treatment plants must find alternative ways to dispose of wastewater. The City has a Reuse Water Systems Policy for developers. This policy states that all new developments and/or substantial improvements shall install a reuse water system for irrigation that can service the entire development. The City has established routes for the major distribution (transmission) lines of the reuse water system, which is constructed of purple PVC pipe to distinguish it from potable systems. Reuse water is currently used by the Diplomat Golf Course. Recently, reuse water distribution was extended to Scavo Park.



Action





Conserve Water



Action

IRRIGATION EFFICIENCY

Irrigation is the City's primary source of potable water use. Efficient sprinkler heads, weather- or sensor-based irrigation controls and properly maintained systems can substantially cut potable water used for irrigation.

While the City has begun using low-flow irrigation equipment, this project will implement a comprehensive program to replace all systems with more efficient sprinkler heads, drip irrigation and weather and sensor-based controls that will allow centralized monitoring, scheduling and operation. These measures will allow for more efficient operation and maintenance of the City's irrigation systems, ensuring potentially costly issues are addressed proactively.

These actions target a 15% reduction in potable water used for irrigation.

Implementation costs are estimated at \$75,000, staged over five years. Benefits include \$73,000 in water savings. The project is expected to achieve 61% of the City's water conservation goal. Project benefits may improve if the cost of water increases more rapidly than the estimated escalation factor of 2.4% annually in the future.

EXPAND REUSE WATER PROJECTS

Alternative water supplies are important for conserving existing potable water supplies and meeting future demand.

The City of Hollywood currently treats Hallandale Beach's wastewater. Wastewater can be used as reuse water once it is heavily treated and is a viable alternative to ocean outfall. Reuse water is a resource that can help the City conserve potable water and help its neighbors avoid wastewater discharges. Figure 2 illustrates expanded water reuse project phasing.

The City of Hollywood's water treatment plant delivers reuse water sourced from Cooper City and Davie to Hallandale Beach. The City has established infrastructure to distribute this reuse water (via purple PVC pipe) for use in irrigation. So-called "purple pipe" water is currently used by the Diplomat Golf Course.

Recently, using Florida Department of Environmental Protection (FDEP) grants amounting to \$440,000, reuse water distribution was extended from Wiley Street in Hollywood to Scavo Park, medians located at north, south and west of the intersection of Three Islands Boulevard and Atlantic Shores Blvd, and residential areas west of Three Islands Boulevard between NE 11th Street and Parkview Drive (Phase 1).

This project (Phase 2) will involve installation of a reuse water line down Three Islands Boulevard from Scavo Park to East Hallandale Beach Boulevard. This water line will be designed to have the capacity to irrigate medians on East Hallandale Beach Boulevard. In addition, it will serve office building irrigation use, residential areas and landscaped medians along Parkview Drive and Leslie Drive.

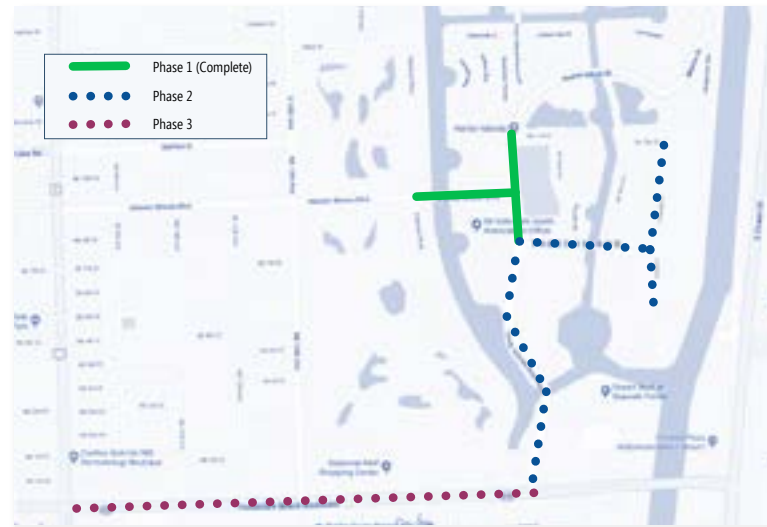
While not included in the project currently, an extension from Three Islands Boulevard/East Hallandale Beach Boulevard west down East Hallandale Beach Boulevard to Federal Highway (Phase 3) could be included in the near future.

**Alternative water supplies are important
for conserving existing potable water supplies
and meeting future demand.**

Staff will request funding for the design of this project during the FY18/19 budget process. After October 1, 2018, staff will procure professional design services. Commission approval will be required to approve the design services. The design phase is expected to take five months. Thereafter, the City will issue an Invitation to Bid and staff will provide education and outreach to the community. The Construction Phase is expected to last six months.

The cost of the project is about \$500,000, with approximately \$90,000 going to design and the rest for construction. Costs are estimated based on the cost for the extension to Scavo Park. Benefits include a savings of about \$770,000 in avoided potable water use charges. Benefits are calculated assuming a 96% cost reduction for reuse water compared to potable water. Since private users will be allowed to access reuse water for irrigation, benefits accrue both to the City government and the community. This potable water savings realized through this project will help achieve five percent of the City's 2040 goal to reduce community water consumption by 40%.

FIGURE 2: EXPAND WATER REUSE PROJECT PHASING



Action

...staff will provide education and outreach to the community...

FUTURE STEPS

Several other opportunities to economically reduce water use and lessen the City's impact on water supplies exist. **Some initial directions for future projects include:**

GREYWATER REUSE

Hallandale Beach is taking steps to expand the availability of reuse water and is encouraging developers to prepare for its use. Greywater is a complementary alternative water source that can be captured and reused on site to conserve potable water. Greywater captures wastewater from sinks, showers, bathtubs and washing machines for irrigation on site. Greywater systems are scalable from single family homes to large multifamily developments.

The City could promote greywater through conducting a pilot project at a City facility (e.g. Sunrise Park). Based on results, the City could develop education, policy and incentives aimed at developers, residents and contractors. In order to design a program, the City would review case studies from cities such as Atlanta, Los Angeles and Seattle. Then, staff would develop the program and communicate it to citizens. Significant education would be required to counteract common misunderstandings related to greywater, including safe sources and applications.

HVAC CONDENSATE HARVESTING

Water vapor condenses when it comes in contact with cooling coils in HVAC equipment. Water is drained from the equipment to prevent corrosion and often plumbed to the sewer. Approximately 10 gallons per day per 1,000 square feet of air conditioned space can be captured. At the City, as much as a half a million gallons of condensate water (after filtration and disinfection) may be available for capture annually for irrigation and other appropriate uses, such as cooling tower efficiency, while reducing sewer flows.

COOLING TOWER EFFICIENCY

Cooling towers dissipate heat from recirculating water used to cool chillers and air conditioners. Heat is rejected to the environment from cooling towers through the process of evaporation. By design, cooling towers use significant amounts of water, accounting for up to 25% of a facility's total water consumption. Water is lost through cooling towers through evaporation, leaks or overflows and blowdown. Blowdown is water discharged from the system, typically to a drain. Blowdown water is replaced with fresh makeup water to maintain an appropriate concentration of dissolved solids. Dissolved solids must be kept at an appropriate level of concentration to avoid scaling, biological growth and corrosion.

In many cases, the amount of blowdown for a cooling tower is greater than necessary, resulting in wasted water. Optimizing the blowdown rate can save water. If appropriate, alternative sources of makeup water may also be used, such as condensate from air handlers or reuse water.

PROCESS WATER EFFICIENCY

The City utilizes water for processes like vehicle washing, food service (e.g. ice-machines, dish-washing, food disposals) and pools (e.g. filtration). Water reclamation systems hold potential for saving water used in vehicle washing. In the food service sector, various water efficiency technologies are available including pre-rinse spray valves. In pools, evaporation and filtration are areas for potential savings.



Action





Action

RESOURCE CONSERVATION & EFFICIENCY - FLEET

Fossil fuel from foreign countries power much of our nation's transportation and poses risks to national security, our economy and environment. Hallandale Beach's fleet of vehicles, police cars and refuse trucks is no different. Even when sourced domestically, as is increasingly the case, gasoline and diesel pollute the air, toxify soil and waterways and contribute to climate change.

A leaner fleet, comprised of more fuel efficient, alternatively fueled vehicles will reduce dependence on volatile-priced gasoline and diesel, while reducing noise and pollution. The goal is to reduce fossil fuel use (i.e. gasoline and diesel) by 10% from the City's 2016 baseline by 2022. This plan also contains great ambition for the future. By 2040 the City will strive to replace 90% of baseline gasoline and diesel use with fuel efficiency or alternative fuels, such as biofuels, natural gas, propane and electricity.

The City spends approximately \$2.1 million per year maintaining and fueling its fleet of 374 on-road and 71 off-road vehicles. The majority of this expenditure is for maintenance (approximately \$1.6 million). In 2016, nearly \$500,000 was spent on 309,000 gallons of fuel. The City utilizes gasoline, diesel and compressed natural gas (CNG). No vehicles currently use electricity, propane Autogas or biodiesel fuel. Hallandale Beach has approximately 0.70 on-road vehicles per employee, slightly higher than the cities of Sunrise (0.66) and Coral Gables (0.68). A study is currently underway to reduce the size of the City's fleet and the findings will be incorporated in the FY18/19 budget process. A project below initiates the process of "right-sizing" the City's fleet.

The average age of the fleet is approaching eight years old. For all on-road vehicles, the annual number of vehicle miles traveled (VMT) is small, averaging less than 5,000 miles per year. While this may be due to the relatively small area of Hallandale Beach, it is also due to a high number of lightly-used vehicles. About two thirds of on-road vehicles traveled less than 12,000 miles in a year.

The City of Hallandale Beach is already taking steps to manage the vehicle fleet to maximize efficiency and control costs and pollution. The City prepared a "Green Paper" on alternative fuels in 2012. The study included a series of ideas to improve the performance of the fleet, including idle-reduction technology for police and rescue vehicles, CNG refuse trucks, a CNG/alternative fuels station at or near the Department of Public Works and branding/communications.

Since publication of the Green Paper, the City expanded its CNG refuse truck fleet to a total of eight trucks. CNG cuts air pollution and reduces greenhouse gas emissions by up to 30%, while eliminating the risk of toxic fuel spills. Initially, these vehicles were fueled at the nearby City of Hollywood Fuel Station. However, this station closed in 2016, forcing the City to fuel these vehicles in distant Pompano Beach at a higher cost per gaseous-gallon equivalent, plus, the down time necessary to drive to and return from the facility. The next step for the City will be to investigate its opportunities to develop alternative fuels infrastructure. The City has started this process by planning two new, publicly-accessible, electric vehicle charging stations as part of the redevelopment of Bluesten Park and the Main Fire Station.



ELECTRIC VEHICLES AND INFRASTRUCTURE

- NPV: \$71,000
- ROI: 287%
- Contribution to Goal: 25%
- Lead Department/Division: Public Works
- Responsibility: Fleet Administrator

INCREASE FUEL ECONOMY

- NPV: \$118,000
- ROI: ∞*
- Contribution to Goal: 25%
- Lead Department/Division: Public Works
- Responsibility: Fleet Administrator

RIGHT-SIZE FLEET

- NPV: \$447,000
- ROI: 524%
- Contribution to Goal: 10%
- Lead Department/Division: Public Works
- Responsibility: Fleet Administrator

*For projects with low or no cost, the return on investment is mathematically infinite, denoted by the symbol: ∞

**Since this project benefits both city operations and community water use, contribution to goal is calculated relative to the SAP's 2040 Goal of reducing community water use by 40%.



Embrace  Change



Action

PROJECTS

The SAP accelerates the City's commitment to a green fleet by including three projects; Electric Vehicles and Infrastructure, Increase Fuel Economy and Right-size Fleet. These projects will produce about \$636,000 in discounted net benefits over 10 years – at no net cost. While these efforts are currently projected to leave the City short of its 10% gasoline and diesel reduction goal (by year 2022), the City is already considering several next steps described below that are capable of creating cost-effective cuts to its current fuel budget and will strive to incorporate such opportunities into planning for the future.

ELECTRIC VEHICLES AND INFRASTRUCTURE

Electric vehicles (EVs) have a substantially lower fuel cost per mile than gasoline vehicles. Meanwhile, the purchase price of EVs continues to decrease. They are now available to the City via a statewide procurement contract. As a result, EVs are good choices for replacing light-duty cars with high annual mileage or fuel consumption.

This project, will replace the most utilized passenger vehicles and light trucks aged seven or more years with EVs, where operationally feasible. Ten such vehicles have been preliminarily identified and will be replaced over two years. Purchase of additional EVs after FY19/20 will be contingent upon cost-effectiveness relative to alternatives. Vehicles will be replaced with the Nissan Leaf or equivalent. Technicians will be trained on EVs maintenance, as necessary. Vehicles will be decommissioned from the fleet after seven years and sold at auction.

EVs require electric vehicle support equipment (EVSE) to keep vehicles charged. The City is already moving forward with plans to install publicly-accessible EVSE at Blusten Park. To support 10 new EVs procured over the next three years, the City will install dedicated EVSE at the City Hall Complex, the Public Works compound and other strategic locations.

Careful planning will be required to site EVSE in appropriate locations, including the effect it will have on availability of parking, since Florida law prohibits vehicles with an internal combustion engine from parking in a spot designated for electric vehicle charging (Florida Statutes 366.94).

Since the new EVs will replace vehicles nearing the end of their useful life, the project considers the incremental cost of replacement with an electric model. This incremental cost is conservatively assumed to be the difference in procurement cost for a Nissan Leaf or equivalent and an average compact vehicle as defined by the current Florida DMS contract.

Based on current terms, is the incremental cost is approximately \$6,000 (e.g. \$28,500 vs. \$22,500). Incremental costs going forward will be monitored to determine whether further EVs procurement is cost effective relative to fuel-efficient vehicles. Salvage value is estimated to be \$2,500. The installed cost of EVSE is assumed to be \$2,000 per charge point. The total project cost of about \$80,000 is offset by the salvage value of replaced vehicles and fuel and maintenance savings, which area estimated at about \$170,000 over 10 years.

INCREASE FUEL ECONOMY

New vehicles are more fuel efficient than in the past. Procuring new, high-efficiency models to replace older vehicles can reduce fuel use and save money. Replacing larger vehicles with compact alternatives, where appropriate, will increase these benefits.

This project will improve the average fuel economy of the City's fleet by procuring high-efficiency vehicles to replace less efficient vehicles.



Action

At least 16 light-duty vehicles have been identified as good candidates for replacement, given their fuel economy, age and usage. These will be validated and an appropriate vehicle with annual fuel economy at least 50% greater than present will be specified using the current Florida DMS contract (e.g. 27 mpg vs. 18 mpg). In order to preserve the plan rate of fleet replacement, this project will be phased in over three years beginning in FY19.

The project assumes no additional cost to the City, since replacement with high-efficiency vehicles should not require any incremental cost. This is because corporate average fuel economy has increased by more than 50% over the last 10 years and fuel-efficient models are typically cheaper than more energy-intensive alternatives. This strategy is premised upon a comparison between the incremental costs of fuel efficient or electric vehicle alternatives. These costs will be monitored and preference will be given to replacement with electric vehicles, where cost-effective. The replacement of 16 vehicles with fuel efficient models is expected to save about \$135,000 over 10 years.

FUTURE STEPS

Opportunities to conserve fuel and boost the efficiency of fleets are developing rapidly. In order to achieve its goals, the City will monitor these trends and prudently pursue cost-effective solutions as they mature.

Future projects may include:

PROPANE VEHICLES

Propane (Autogas) is a domestic fuel that is cost-competitive with gasoline and diesel. It has environmental benefits relative to those fuels and is widely available, since propane distributors will install a fueling station at no upfront cost in exchange for a contract to purchase the fuel.

Currently, Autogas vehicles are best suited for mid-duty applications, such as cargo vans and maintenance trucks. The relatively low incremental cost of such vehicles and the ability to finance on-site fueling stations through long-term fuel purchase agreements, makes Autogas a potential solution for the City's fleet.

BIOFUELS

Biofuels include biodiesel and ethanol. These fuels are sourced from plant or animal-based feedstocks, such as soybeans, corn, waste vegetable oils or animal fats, which result in less pollution than gasoline or diesel.

While not currently used in the City's fleet, blends up to 20% biodiesel can be used in existing diesel vehicles and up to 85% ethanol in existing "flex fuel" vehicles without significant changes to maintenance or damaging engines. Biofuels can often be procured in bulk quantities via negotiated contracts at a price equivalent to diesel or gasoline. While the City cannot expect fuel cost or use savings via biofuels, they can be utilized in many vehicles with little or no modification.

ANTI-IDLING

The U.S. Department of Energy estimates idling vehicles burn from a quarter to a whole gallon of fuel per hour for a total of 2 billion gallons of fuel per year nationwide. Many municipalities in the U.S. have enacted anti-idling policies as an effective, low-cost way to save money and fuel to reduce engine wear, emissions and noise.

In some cases mission-critical applications, such as electronics and climate control in a police K9 unit, require vehicles to idle. Auxiliary Power Units (APUs) can solve this problem via a battery backup system. However, recent case studies have indicated that APUs providing air conditioning are not yet durable, cost-effective or compatible with the needs of the City's fleet.

The City will continue to monitor solutions for anti-idling as technology develops.

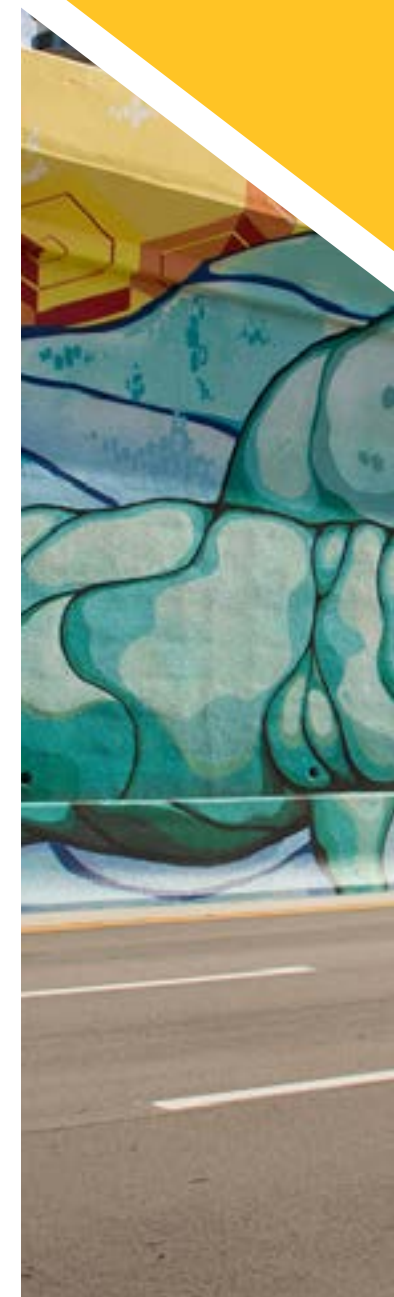
VEHICLE MILES TRAVELED REDUCTION

Reducing the vehicle miles traveled (VMT) of fleet vehicles can save fuel, reduce maintenance expenditures and limit environmental impacts. VMT may be reduced by consolidating the routes of service vehicles to eliminate duplication of trips. Service vehicle scheduling and routing may be optimized. Carpooling or use of shuttle services for high-use routes can have a similar effect. Trips may be eliminated via teleconferencing. Incentivizing City employees to utilize transit, where feasible, can reduce the need for fleet vehicles.

ALTERNATIVE FUELS INFRASTRUCTURE FEASIBILITY ASSESSMENT

New sources of domestic natural gas have led to wider availability of CNG and propane Autogas. Meanwhile, the auto industry continues to rapidly innovate in the area of EVs. The price of these alternative fuels is already competitive with gasoline and diesel. Despite the promise of clean fuels, new – and sometimes costly – infrastructure is required to support alternative fuel vehicles.

The City will study options for developing the infrastructure required to support demand for clean fuels, including CNG, propane Autogas and electricity.





Action

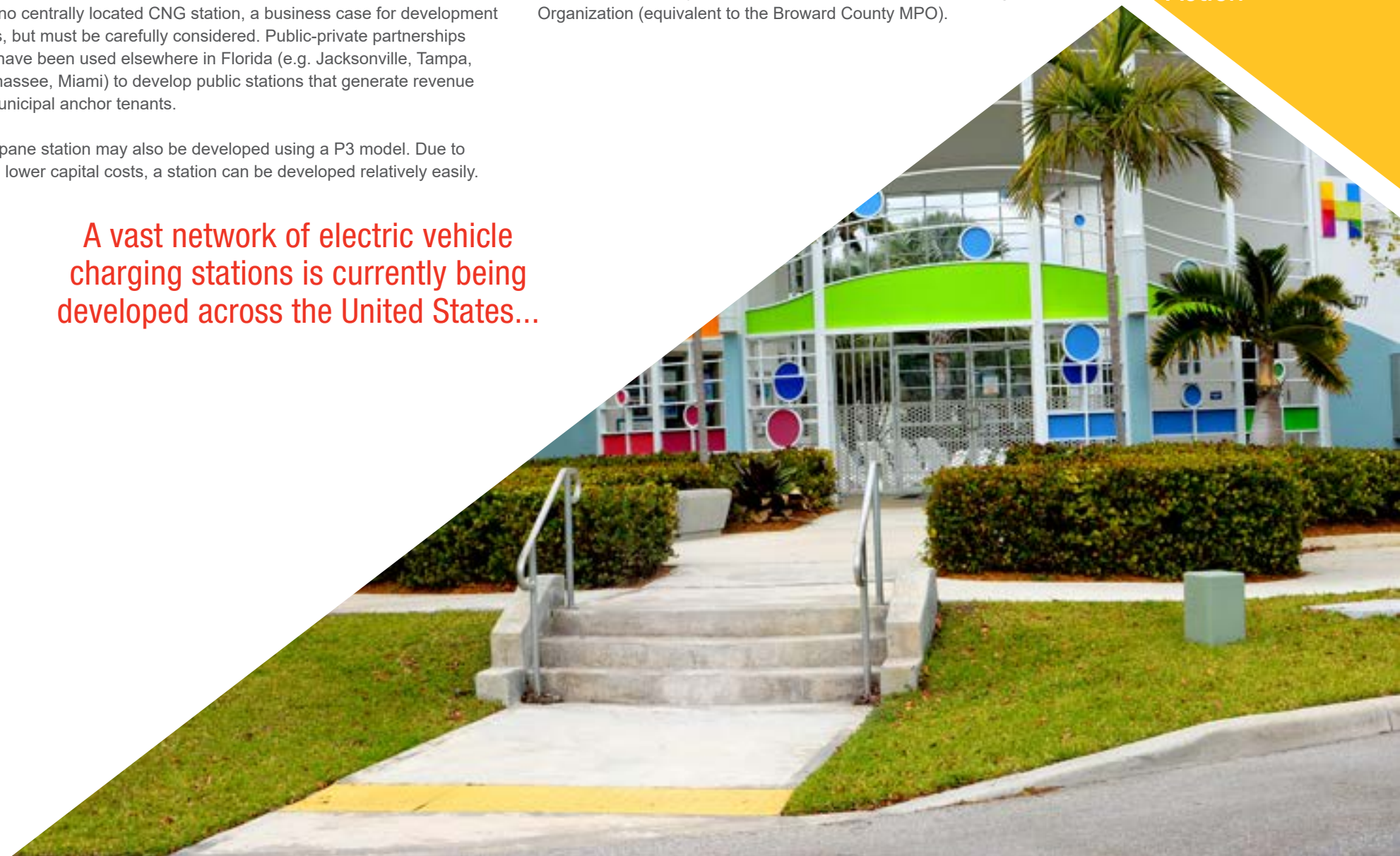
Most pressing is the need for CNG infrastructure. The City maintains a fleet of eight CNG refuse trucks. Initially, these trucks were fueled at the nearby City of Hollywood Fuel Station. However, this station closed in 2016, due to the expense of upgrading aged equipment. This forced the City to fuel these vehicles in distant Pompano Beach at a higher cost per gaseous-gallon equivalent. As a result, the business case for CNG has changed for the worse.

With no centrally located CNG station, a business case for development exists, but must be carefully considered. Public-private partnerships (P3) have been used elsewhere in Florida (e.g. Jacksonville, Tampa, Tallahassee, Miami) to develop public stations that generate revenue for municipal anchor tenants.

A propane station may also be developed using a P3 model. Due to much lower capital costs, a station can be developed relatively easily.

A vast network of electric vehicle charging stations is currently being developed across the United States...

A vast network of EV charging stations is currently being developed across the United States, accelerated by the Federal Government's settlement with Volkswagen, in the wake of its diesel vehicle scandal. As a result of the settlement, millions of dollars will be invested via FDEP and Electrify America in South Florida's EV infrastructure. This can be supplemented with programming Congestion Mitigation and Air Quality (CMAQ) funds for EVSE on public property, as has been done by the North Florida Transportation Planning Organization (equivalent to the Broward County MPO).





Action

MATERIALS MINIMIZATION & RECYCLING

Diverting the City's waste from landfills through strategies such as source reduction, reuse and recycling avoids harmful pollution and reduces transportation emissions. It also saves money and has the potential to generate revenue.

The City provides garbage, bulk waste, yard waste collection and recycling services to 4,728 residential single family accounts on a weekly basis. The City also provides garbage collection for 707 multifamily residences and 647 commercial accounts and recycling collection services for approximately 43 multifamily residences and five commercial accounts. Other commercial accounts are serviced by private contractors². There is currently no composting program for the City. The City does not own or operate any landfills. Presently, 100% of residents' garbage is transported by City trucks to the Waste Connections transfer station in Pembroke Pines and then trucked to an Orlando-area for landfill disposal. Bulk/yard waste is transported to the Monarch Hill Renewable Energy Park, where bulk recyclable materials are diverted from the waste stream and yard waste is used to generate methane for a renewable energy plant.

The City tracks revenue and expenses separately for the different account types (single-family residential, multifamily residential and commercial), but currently does not track waste disposal or recycling tonnages separately for these account types. For garbage collection, 83% of accounts are single-family, 10% are multifamily, and seven percent are commercial. It is reasonable to assume that the bulk of garbage collected is residential, however, it is not possible to disaggregate tonnages by account type based on available data. The term "community-wide" includes all three waste types.

Beginning with the City's own municipal operations, the City intends to stop waste before it happens, reducing waste generation sources by five percent by 2022. The City will seek to espouse the principles of Sustainable Materials Management (SMM). SMM systematically uses and reuses materials more productively over their life cycles. Looking at a product's life cycle, the City can identify opportunities to reduce environmental impacts, conserve resources and reduce costs.

Continuing beyond the City's sanitation services to our solid waste collection program, the City should aspire to divert 30% of materials from the landfill through recycling and composting by 2022. Over the long term, the goal is to divert 75% of both community-wide materials and materials from city operations by 2040. A barrier to this goal is that many of the City's multifamily buildings were constructed without the on-site space necessary to achieve a high level of recycling.



² In FY16/17, permitted waste haulers included: Bicon, Inc., Lopefra Corp., Medley Metal Recycling, Panzarella Waste & Recycling Services, Republic Services, Inc., Sunshine Recycling Services, Tropical Sanitation, Waste Connections, Waste Management, Waste Pro, and World Waste Recycling.

INCREASE COMMUNITY-WIDE RECYCLING

- NPV: \$1,066,000
- ROI: 54%
- Contribution to Goal: 100%
- Lead Department/Division: Public Works
- Responsibility: Sanitation Superintendent, Public Works Director and Recycling Coordinator

GREEN PURCHASING PROGRAM

- NPV: \$12,000
- ROI: ∞*
- Contribution to Goal: 1.1%
- Lead Department/Division: Procurement
- Responsibility: Procurement Director

COMPOSTING FEASIBILITY ASSESSMENT

- NPV: -\$49,000
- ROI: -100%
- Contribution to Goal: To be determined
- Lead Department/Division: Public Works
- Responsibility: Green Initiatives Coordinator

*For projects with low or no cost, the return on investment is mathematically infinite, denoted by the symbol: ∞

PROJECTS

Three potential projects to boost recycling rates and better manage the City's materials are under consideration, including Increase Community-wide recycling, Green Purchasing Program and Composting. While these projects come at a cost, potential implementation will help meet the 30% diversion goal by 2022. The projects will also provide a substantial financial incentive to continue expansion of and participation in the City's recycling and reuse initiatives.

The City is investigating monetizing (privatizing) of commercial and multifamily sanitation services. The intent is to improve the Sanitation Division's financial performance. However, careful analysis of this proposal is needed given the potential for realization of substantial recycling revenues and waste disposal cost avoidance if the City's diversion rates are improved. This should include tracking for these material types separately from single-family generation.

INCREASE COMMUNITY-WIDE RECYCLING

On a per capita basis, Hallandale Beach residents generate about 2.8 tons of municipal solid waste per year, amounting to more than 25,000 tons community-wide⁴. The costs of collection, transportation and disposal at an Orlando-area landfill make managing this waste expensive for the City. Currently, Hallandale Beach is paying unnecessary tipping fees and foregoing potential revenue by trucking valuable recyclable commodities hundreds of miles for landfill disposal.



The community-wide recycling rate of five percent is far below the national average of ~34% and the 75% diversion target established by the State of Florida (Florida Statutes 403.7032). This low rate translates to substantial potential savings. The City is able to earn \$28 per ton in recycling revenue through an agreement with Waste Connections (formerly Progressive Waste Solutions of Florida). This agreement is effective through December 31, 2018 and will automatically renew for three successive five year periods, provided that neither party has provided the other party with written notice of its intent not to renew the term. The City's recycling is currently transported to the Waste Connections materials recovery facility in Pembroke Pines. Together, with \$48 per ton tipping fees, this means every ton of waste recycled instead of landfilled represents a \$76/ton benefit to the City.

By significantly increasing community-wide recycling, the City can simultaneously save money on waste disposal costs and realize substantial returns from the sale of recyclable materials. Increasing MSW diversion just five percent each year over 10 years will allow the City to realize \$2.4 million in net present value, with a 189% ROI after all expenditures. These economic returns will be important for funding other projects in the City's sustainability program which may have extensive benefits, but smaller financial rewards.

MATERIALS MINIMIZATION & RECYCLING

The City has great potential to improve diversion rates. In FY15/16, Hallandale Beach generated 25,455 tons of MSW, 1,323 tons of recyclable materials and 4,476 tons of yard waste. The community-wide MSW generation rate was nine percent above the national average³, while the community-wide diversion rate, including recycling and diversion of bulk/yard waste, was 19.4%, significantly lower than the national recycling rate of 34.6%. The community-wide recycling-only diversion rate, excluding bulk/yard waste, is even lower, close to five percent. These low rates leave ample room for improvements, with the potential for the City to earn substantial recycling revenues as the diversion rate increases. The City earns a rebate for recyclables of \$28 per ton, amounting to approximately \$37,000 in 2016, while it pays \$48/ton to dispose of MSW, amounting to approximately \$1,218,000 in FY16.



Action





Action

Save < Money

Monetizing commercial and multi-family collection would eliminate the City's ability to generate recycling revenue from these properties, leaving the financial benefits to be partially captured by private waste haulers. Monetizing these waste streams would reduce the benefits of this project by an estimated 25%. However, funds could be allocated from continuing franchise fee revenue to maintain the materials diversion process.

Achieving projected savings will require a combination of assessment, planning, infrastructure improvements, community outreach and stability in the value of recyclable materials. Some of the necessary steps include:

- Tracking materials collection by account type (single-family, multifamily, and commercial)
- Conducting waste audits to better understand the materials stream
- Hiring two staffers who are dedicated to overseeing sustainability projects and increasing the City's recycling rate
- Procuring new, consistently branded, residential recycling bins citywide
- Ensuring all public spaces have recycling bins accompanying waste bins
- Provide financial incentives and technical assistance to bolster recycling in older multi-family buildings
- Conducting education and outreach to boost recycling among the City's single family residents
- Creating partnerships to expand advocacy of recycling
- Sending a multi-language recycling guide to every Hallandale Beach resident
- Offering a large number of workshops to community organizations
- Implementing an incentive program for residents (ex: Third party vendors fit recycling bins with a GPS tracker or chip and recycling is weighed as it is collected. Residents receive reward points, which can be redeemed for discounts and gift cards, based upon the amount that they recycle.)
- Conduct periodic training and retraining for City sanitation staff to ensure best practices are the norm

Increasing the City's community-wide diversion rate will have substantial environmental and social benefits. These include reductions in fuel use, GHG emissions, and air pollutants from handling, transporting and landfilling waste.

Community outreach is an integral component of this project. Due to the fact that everyone generates waste in their home and business, efforts to promote recycling will become one of the most visible aspects of the City's sustainability efforts. The program will allow the City to be seen as a regional leader that "walks the walk and talks the talk" on sustainability. There is the potential that increased commitment will lead to an increase in green jobs in businesses supporting recycling and reuse.



Action

After the 10 year project life, the City's MSW diversion rate should stand at 30%, leaving ample room for future improvements and costs savings. Other Florida Cities have set ambitious waste diversion goals. Orlando has a goal of 50% waste diversion by the end of 2018, and zero waste by 2040, building on its 2010 baseline rate of 27%. In 2017, Orange County reported a 72% diversion rate as accounted by FDEP. As one way to meet these targets, the City is discussing a recycling requirement for owners of multi-unit residential and commercial buildings. In Florida, Collier, Lee and Miami-Dade counties well as the City of Gainesville all require mandatory recycling for commercial and/or multifamily properties. Orlando also cut weekly garbage collection days in half while doubling recycling pickups for residents with the expectation of realizing cost savings from reduced waste-handling. The City should analyze incentives to achieve the waste stream reduction goal attainment and only use mandates as a last resort.

Although not modeled as part of this initiative, additional actions, such as implementing a Styrofoam and/or plastic bag prohibition, would reduce Hallandale Beach's waste disposal costs, reduce litter and prevent environmental contamination in the community. The City is currently studying the feasibility of implementing an internal policy that would eliminate the purchase of Expanded Polystyrene (more commonly known as Styrofoam) with City funds or by contractors paid with City funds. The legal issues surrounding the plastic bag ban in Coral Gables are also being monitored. As the legal issues resolve, the City should consider following the leadership of Coral Gables.

GREEN PURCHASING PROGRAM

Green purchasing is a key component of a sustainability program. Source reduction through green purchasing has the greatest impact on waste minimization efforts, and should be prioritized above other source reduction efforts. In addition, green purchasing allows Hallandale Beach to choose products that are less toxic, less resource and energy-intensive, locally sourced or fairly traded⁵, among other potential environmental and social benefits. Often, such products are available at little to no incremental cost. By prioritizing bulk buying and information technology products that save energy, green procurement programs can result in net savings to the City. By establishing a green purchasing policy for its internal operations, the City can set an example for the community.





Action

Although there are many environmental benefits associated with green purchasing, economic benefits come mostly from reduced energy consumption. Information technology (IT) equipment – from computers and monitors to network devices and servers – are more integral to the City's daily business than ever. As technology improves, so do opportunities for more efficient use. The City's IT department has already begun to reduce the energy demand of the City's equipment by using equipment power management features and virtualizing servers (i.e. by storing data over the internet), among other measures.

This project involves establishing a plan to ensure that 100% of qualifying IT equipment meets the ENERGY STAR® standard (or equivalent) for energy efficiency. In addition, the City will preferentially purchase consumables, durable goods and cleaning products and materials that will enhance ecological benefits, promote the health and safety of staff and citizens and reduce operating expenses. The project is a minimal cost measure. It will require staff time to develop and roll out the green purchasing policy and educate City employees, but with very little additional capital investment. Legacy electronics (computers, laptops, monitors, etc.) will be replaced with ENERGY STAR® equivalents at no incremental cost because ENERGY STAR® labeled products typically do not cost more than those without the label.

COMPOSTING FEASIBILITY ASSESSMENT

Higher rates of materials diversion (>30%) may require removing biodegradable material from the City's materials stream through a composting program. This could lead to additional savings from avoided tipping/disposal fees. Implementing a 50% single family residential diversion rate within an additional five years after achieving the 30% goal detailed in the project above would require the development of a composting facility. Such a facility would be regional in scale and would likely be developed via a public-private partnership or a local government cooperative. Although most cities do not generate revenue from composting programs, the City of Austin, Texas realizes revenue from the sale of "Dillo Dirt," an EPA-approved composted blend of yard waste and biosolids. More study is needed to evaluate the economic benefits of setting up a composting program for Hallandale Beach.

To evaluate potential benefits and cost savings of diverting compostable waste through a municipal program, as well as, the potential costs of implementing such a program, the City will complete a Composting Feasibility Assessment. This study will evaluate various options for program implementation (i.e. public-private partnership, cost sharing

agreement with nearby local governments or contracting with a composting service provider) to determine costs and benefits to the City.

The City may need to develop a request for proposal (RFP), secure funding, accept proposals and implement the study if this analysis cannot be completed in house. The costs of conducting the study are estimated to be approximately \$49,000. Benefits will include a clear understanding of various options for implementing composting in the City and their financial implications. Financial benefits are not yet estimated as they will depend on the details of selecting and implementing a composting program.



FUTURE STEPS

As the City moves forward to prevent pollution, minimize waste and boost recycling and composting, several strategies can be developed to reach its goals.

REGULATE USE OF STYROFOAM AND SINGLE-USE PLASTIC BAGS

Expanded polystyrene (EPS), also known as Styrofoam, is a petroleum based material that is not recyclable or biodegradable. EPS breaks up into small pieces and poses a threat to wildlife, which may inadvertently ingest it. Like single-use plastic bags, it also has become a source of litter in many urban environments, including Hallandale Beach. A ban on the use of polystyrene containers and/or plastic bags in the City could reduce litter, benefit the environment and reduce waste generation.

In 2017, the City of Coral Gables prohibited the use of expanded polystyrene by City vendors, contractors in City facilities, special event permittees and their subcontractors, and food service providers and stores. Coral Gable's ordinance was challenged by an industry lawsuit, but has been upheld pending appeal.





Action

In May 2017, Coral Gables also became the first Florida city to impose a partial ban on single use plastic bags. The city ordinance, designed to promote reusable or paper bags, fines retailers who use single-use plastic bags between, with exceptions for plastic bags used for dry cleaning, medications, newspapers and pet waste. However, the ban may be challenged in court because the Florida Legislature blocked local governments from banning plastic bags in 2008. To date, about 40 Florida cities have passed resolutions asking the state to grant them the right to regulate plastic bags in their jurisdictions. Pending court decisions, Hallandale Beach may wish to consider prohibiting EPs and/or plastic bag items to reduce waste and litter in the community.

and reveals common waste practices. Characterizing waste uncovers opportunities to improve waste diversion rates, increase recycling, reduce greenhouse gas emissions and lower disposal costs. A waste audit report prepared for Palo Alto in 2012 found that 70% of the city's waste stream could potentially be diverted through either recycling or composting. Performing a waste audit is an essential first step to identifying markets for recyclables and realizing cost avoidance associated with waste diversion. The City will procure a waste audit as an initial step to increasing our community-wide diversion rate through project Increase Community-wide Waste Diversion.

PERFORM A WASTE CHARACTERIZATION STUDY

A waste audit, also known as a waste characterization study, identifies and quantifies the various materials in an organization's waste stream

To date, about 40 Florida cities have passed resolutions asking the state to grant them the right to regulate plastic bags in their jurisdictions.



City of Hallandale Beach
Municipal Complex
400 South Federal Highway



Action

LAND USE & TRANSPORTATION

Hallandale Beach (incorporated in 1927) is one of the oldest cities in South Florida, tracing its roots to the turn of the 20th century. Since that time, it has grown to a modern, compact city. The City's high-density nature lends itself to sustainability. In dense urban environments, fewer resources are needed per capita, while multifamily housing, public transportation and destinations within biking or walking distance save energy and fuel, foster cultural connections and promote health.

According to the Citywide Master Plan and Implementation Strategy, the basic urban design of the City remains focused on automobiles rather than pedestrians, it lacks a distinct City center, land uses are separated without linkages to encourage non-vehicular trips, development does not engage the street, population growth has created a demand for additional recreation space and open space/water and access to lakes and canals is limited. The Master Plan recommends that the City create a new town center around a redesigned Bluesten Park and adjacent to a potential future commuter rail station. The Central Regional Activity Center (RAC) zoning district supports this vision. It is comprised of several sub districts, including the Transit Core subdistrict which borders Bluesten Park and intends to create a compact, mixed-use, vibrant, pedestrian friendly area around the planned Tri-rail Coastal Link station and along main transit routes.

The City has also embarked on a multi-year \$58.5 million program to improve existing parks and develop new public facilities. As part of this process, the City broke ground on the redesigned Bluesten Park during October 2017 and it is still discussing the potential to create a new City Center around this space.

Transportation in Hallandale Beach – like most places – is dominated by automobiles and congestion is a major concern for citizens. While efforts are underway to reduce congestion through roadway improvements including signal optimization, the City's future lies in developing alternatives to reduce vehicular trips. About four percent of travelers use mass transit – higher than the Broward County average of little more than one percent – but there is much room for improvement. The City has a free Community Bus that provides local and contiguous municipality connections. The City has adopted VMT reduction targets. The City is also committed to enhancing the Community Bus system and funding bicycle and pedestrian improvements.

The City implements a vision for future land uses and redevelopment through a Comprehensive Plan and a code of ordinances, including a zoning and land development codes and the 2008 Commission adopted Master Plan. Several sustainability policies are included in these tools, including promotion of compact, mixed-use development, protection of beach dunes, restoration of native coastal vegetation and the establishment of climate change Adaptation Action Areas (AAAs) within the City.

Green building is an integrated process of infrastructure planning, design, construction and operations that is economical, socially and environmentally responsible throughout a building's life cycle.

BIKESHARE

- NPV: \$0
- ROI: ∞^*
- Contribution to Goal: To be determined
- Lead Department/Division: Development Services
- Responsibility: Transportation and Transit Planner

GREEN PURCHASING PROGRAM

- NPV: \$12,000
- ROI: ∞^*
- Contribution to Goal: 1.1%
- Lead Department/Division: Procurement
- Responsibility: Procurement Director

BUILD-OUT BICYCLE AND PEDESTRIAN NETWORK

- NPV: -\$660,000
- ROI: -100%
- Contribution to Goal: To be determined
- Lead Department/Division: Development Services
- Responsibility: Transportation and Transit Planner

*For projects with low or no cost, the return on investment is mathematically infinite, denoted by the symbol: ∞



PROJECTS

BIKESHARE

Bikeshare programs provide greater access to bicycles for residents and visitors, facilitating trips without a car. The county's bikeshare program has installed a station at North City Beach Park. However, a City-wide bikeshare program does not currently exist.

Traditional bikeshare programs, such as the county's, involve dedicating sites and building expensive infrastructure to dock bicycles and are oftentimes geared toward tourists. New, dockless, approaches to bikeshare solve this problem by using a mobile app to electronically lock/unlock bicycles tagged with a GPS. Bicycles can be accessed anywhere in the City. Dockless bikeshare programs are run by third-party, for-profit entities, such as Limebike, Ofo and Mobike and require no investment from the City other than regulating and monitoring the license agreements under which they operate.

Dockless bikeshare programs originated in China's largest cities, where 70 dockless bikeshare companies operate over 16 million bikes. In two of these cities, Beijing and Shanghai, the number of car trips under five miles has fallen for the first time according to the Institute for Transportation and Development policy, a trend that corresponds with the introduction of dockless bikesharing. Dockless bikeshare programs have since moved forward in Dallas, Miami, Seattle, San Francisco and Washington, D.C.



To be successful, thoughtful permitting and regulatory processes to guide vendors and users must be established. Staff is currently meeting with providers and researching best practices to establish policies and a selection process is underway. They will closely monitor system performance (e.g. travel miles, miles per hour, routes, pick up and drop off locations, rental duration and ridership to refine the City's regulatory approach.

The benefits of this no-cost project include wider access to bicycle transportation, reduced congestion, reduced pollution and improved health for riders. These benefits are vitally important to the City's future, but difficult to quantify. Over time, the data collected through the system will permit better estimation of benefits.

BUILD OUT BICYCLE AND PEDESTRIAN INFRASTRUCTURE

Bicycling and walking are common throughout Hallandale Beach, thanks to a functional but incomplete network of infrastructure. Completing this network will provide alternatives to automobile travel, better connect neighborhoods, improve safety and enhance the aesthetics and quality of life in the City.

LAND USE & TRANSPORTATION

Projects requiring green building certification in Hallandale Beach are as follows:

1. New commercial buildings or major renovation projects greater than 50,000 gross square feet
2. New residential/hotel buildings or major renovation projects of 50 units or greater, any commercial residential or mixed-use project requiring the allocation of flexibility or reserve units
3. Any new City owned and operated building construction projects
4. Any new major or minor development projects requesting financial assistance from the Community Redevelopment Agency

Certification is required through a recognized third-party, such as U.S. Green Building Council (LEED) or Green Building Initiatives (Green Globes). These projects receive expedited permitting review and approval and developers have access to training workshops. Four buildings in the City have achieved green building certification. Three are City facilities (OB Johnson Park, Foster Park and BF James Park). LEED certification is pending for the newly constructed Fire Station 7. A non-municipal project, The Village at Gulfstream Park, is currently undergoing certification.

The SAP has established goals that build off success with green building and transportation alternatives.

The City's goal is to increase the percentage of the bicycle/pedestrian network that is level of service B or better by 10% annually until 2022. This means bicycle and pedestrian friendly sidewalks and intersections and dedicated infrastructure with low levels of interaction with motor vehicles.



Action





Action



LAND USE & TRANSPORTATION

The City will also establish more targeted green building standards for new public, commercial and multifamily buildings and infrastructure by 2022. These targeted green building standards will build upon the City's current standards and will be used to ensure that buildings meet targets set forth by the City. This new code will select certain credits that already exist in third-party rating systems and will potentially develop new credit areas of its own in order to create a condensed suite of credits targeted specifically to achieving goals that the City sets forth. For instance, if the new green building code sets a focus area pertaining to stormwater management the code would work to incentivize features such as green roofs and low impact development.

By 2040, the City aspires to achieve a balanced transportation system with no single mode having more than 30% of total trips. Hallandale Beach will also establish fiscally responsible sustainability standards for existing buildings and infrastructure so that all eligible structures in the City are as energy efficient as possible.

This SAP identifies two projects that pave the way towards achieving these goals. While the economic benefits of these projects is difficult to quantify, it is clear that fostering more mobility options will reduce pollution, improve health and safety and add vibrancy to City streets. The City is developing a comprehensive Mobility Plan that will be presented to the community at City Commission before the end of FY17/18. This Mobility Plan will be the galvanizing force behind future multimodal projects and is a critical element of achieving the goals laid out in the SAP.

Through this project, the City will develop and adopt Bicycle and Pedestrian Level of Service (LOS) standards. These standards will allow the City to close gaps in bike and pedestrian ("bike/ped") connectivity and prioritize projects identified in the City's 2016 Basis of Design Report (BODR) and Multimodal Mobility Plan under development. This plan preliminarily assigns the City's Bicycle and Pedestrian system a LOS rating of "D," meaning moderate-to-high interactions with motor vehicles that limit bicycling to advanced adult bicyclists and cause safety and comfort issues for pedestrians. Projects can be incorporated into the City's bike/ped master map to develop a work plan for implementing projects. Infrastructure improvements will be complemented by uniform signage and amenities, such as bike racks, shade trees, water features and benches. An education and outreach plan will inform motorists, bicyclists and pedestrians about the improvements to the City's bike/ped network and encourage its use. The project is aimed at moving the City's LOS standard to level "B." This means bicycle and pedestrian friendly sidewalks, intersections and dedicated infrastructure with low levels of interaction with motor vehicles. Specific LOS standards will be developed as part of this project.

Costs include development of detailed LOS standards and implementation of bike lane projects. For illustrative purposes, these costs are derived from the draft 2016 Multimodal Mobility Plan, including new bike lanes along Three Islands Boulevard, Atlantic Shores Boulevard and NE 14th Avenue. Occurring in 2019 through 2022, these costs amount to \$660,000, when accounting for the time value of money, or about \$150,000 per year over four years. Incremental investments in sidewalk improvements outlined in the BODR are assumed to occur outside of the scope of this project. The benefits of reduced vehicle miles and increased bicycle and pedestrian travel are significant, including reduced congestion and pollution, improved quality of life, but are not quantified at present.



FUTURE STEPS

The form and function of cities is constantly changing. As Hallandale Beach's streets and spaces evolve, new opportunities will arise to foster development and mobility that benefits the economy, citizens and the environment. Some potential directions for future transportation and land use initiatives include:

GREEN BUILDING AND OPERATION STANDARDS

The City has adopted voluntary third-party standards for new construction/major renovation of its buildings and certain commercial/multifamily buildings. Standards for civil infrastructure, landscapes or existing buildings have not been adopted.

Enhance < Communities



Action



While voluntary third-party standards validate integrated design and construction, they do not consistently lead to outcomes important to the future of Hallandale Beach. The City is rapidly redeveloping. In order to achieve its long term goals, the City will consider enhancing the existing green building program by establishing prescriptive targets consistent with the focus areas of this SAP, such as energy efficiency, water conservation and waste minimization.

For example, consistent with a 2016 study of building energy efficiency in Santa Monica, commercial and multifamily energy performance can be improved by 10% and 15% relative to code (TRC 2016). The California building energy code is very similar to Florida's Building Energy Code in terms of performance. Applied to Hallandale Beach's current commercial/multifamily development activity, prescriptive energy efficiency standards could save eight million kilowatt hours over 10 years (nearly two percent of total community energy consumption), resulting in a \$1.2 million net benefit to residents, after accounting for the cost of additional energy efficiency measures.

This Green Building and Operations Standards project will include an in-depth analysis of an ordinance, modeled after the City of South Miami, which would among other things amend Chapter 8, Article II of the City's Building Code to create definitions, criteria and regulations for solar collectors in the City of Hallandale Beach. The City Commission expressed interest in adopting an ordinance such as this during late 2017. City staff drafted an ordinance, but upon further discussion it was decided that the item would be deferred and further researched as part of this SAP.

With adoption of this SAP, the City will also consider expanding its standards to existing buildings and public infrastructure, such as parks, roads and utilities.

This process requires building a community consensus on the benefits and a time period

that is reasonable for implementation. Adoption of this Plan starts the journey, but does not reach the destination.

The process the City could follow to enhance its green building program includes establishing an interdepartmental team to review the results of the current Green Building Program, researching best management practices, identifying priorities, modeling the costs and benefits of green building techniques necessary to achieve priorities, conducting stakeholder outreach, revising the Green Building Code and receiving approval from the City Commission. One strategy for improving energy use in existing buildings could be providing a subsidized, no cost energy audit to owners that make the investments based on its recommendations. This could be done in partnership with FPL.

ECO-DISTRICT

The City's 2009 Citywide Master Plan recommends establishing a town center around the redesigned Bluesten Park, the existing government center, the Villages at Gulfstream Park, and a future multimodal transportation station on the FEC corridor. The center will promote pedestrian-oriented, mixed-use, sustainable redevelopment. The City's Regional Activity Center (RAC) zoning was created specifically because of the availability of transit along this corridor. In order to ensure this new center maximizes opportunities to incorporate sustainable features, including a transit facility, the City should consider expanding the goals of the RAC to establishing it as an eco-district.

An eco-district applies sustainability planning principles to the neighborhood or district level, establishing goals and requirements for mobility, energy and water use, materials management, health, habitat and equity, often resulting in a showcase for high-performance redevelopment. Eco-districts often also involve development of key sustainability infrastructure, such as transit centers, reclaimed water for irrigation, on-site capture and storage of storm water, complete streets and other access enhancements, LED street lighting, district cooling, etc.



Action

Eco-districts also provide the opportunity for a variety of value capture financing methods, such as tax-increment financing, business improvement district financing and infrastructure impact fees, among others, that take advantage of the increased value high-quality, high-performance development provide to the City and its landowners. Eco-district principles have been implemented in the Pearl District in Portland, the Uptown neighborhood of Pittsburgh and the Seaholm District in Austin.

FORM-BASED CODE EXPANSION

As the City continues to experience intensifying development activity, it has begun applying form-based code approaches to zoning and development regulation. Form-based codes are a zoning framework that regulates the physical form rather than the use of development. By controlling the relationship between buildings and streets, regulating the size and form of buildings and the scale of streets and blocks, form-based codes more directly foster sustainable urban environments, while meeting the expectations of landowners and developers. Currently, the City has developed a form-based code along U.S. 1/Federal Highway. The City is considering expanding form-based codes to the Hallandale Beach Boulevard Corridor expansion. Calibration of this approach can help ensure that future demand for growth is harmonized with needs for mobility and livability.

ENHANCE COMMUNITY BUS SERVICE

The City's developing Mobility Plan recognizes that opportunities to increase right-of-way for vehicular traffic in the City are substantially constrained. The Mobility Plan includes a suite of recommendations

related to enhancing the Community Bus service. The primary recommendation involves reducing headways to 30 minutes by investing in additional buses, refining routes and adding hours of service. The study estimates a doubling in system funding to achieve this goal. Other recommendations include enhancing the experience of using the system by improving bus stops, implementing technology to track operations, enhancing amenities to connect transit to walking and bicycling facilities and coordinating with the planned Tri-Rail Coastal Link station.

A long term goal could be to create intercept parking garages on A1A, Hallandale Beach Boulevard and Federal Highway (US 1) to keep cars at the outer limits of the City and link the garages with five minute headways for the Community Bus service during peak travel times or special events.





Action

DEVELOP A VULNERABILITY / ADAPTATION ASSESSMENT

- NPV: -\$82,000
- ROI: -100%
- Contribution to Goal: 100%
- Lead Department/Division: Public Works
- Responsibility: Green Initiatives Coordinator

DUNE PROTECTION PLAN

- NPV: \$0
- ROI: ∞^*
- Contribution to Goal: 100%
- Lead Department/Division: Public Works
- Responsibility: Public Works Director

LOW IMPACT DEVELOPMENT STANDARDS

- NPV: \$0
- ROI: ∞^*
- Contribution to Goal: $**$
- Lead Department/Division: Development Services
- Responsibility: Development Services Director

*For projects with low or no cost, the return on investment is mathematically infinite, denoted by the symbol: ∞

**The contribution of this projects to goal cannot be calculated at present but will be calculated as projects and project ideas are further developed.

NATURAL RESOURCES & RESILIENCE

South Florida coastal communities are uniquely vulnerable to the projected impacts of a changing climate. As documented by the Florida Climate Institute, a multi-discipline network research and scientific organizations, including 10 of the state's public and private universities, rising seas, salt water intrusion, more intense storms and temperature extremes already threaten South Florida and are projected to pose even greater risks in the future (FCI, 2017). However, our region has proven its resilience to environmental challenges in the past and is taking the lead, as exemplified by the Southeast Florida Regional Climate Change Compact (the Compact), in mitigating and adapting to climate change.

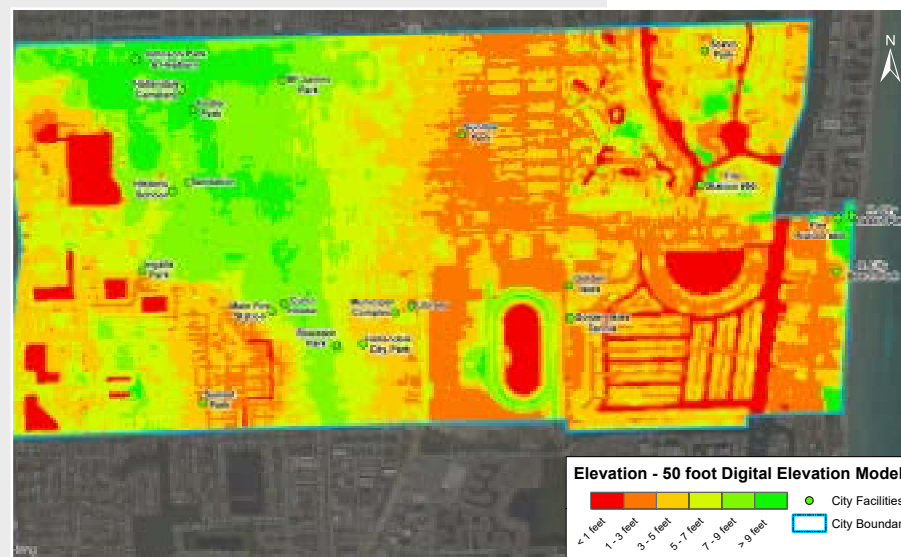
The Compact is partnership among South Florida's four counties to coordinate climate change mitigation and adaptation across the region. A Compact member since 2013, the City of Hallandale Beach is one of 35 South Florida cities cooperatively and proactively managing the risks of a changing climate. By continuing to work collaboratively with regional leaders, Hallandale Beach will make sure the City acts strategically to adapt to changing conditions.

Hallandale Beach's proximity to the Atlantic Ocean and the Intracoastal Waterway comes with a risk of flooding from sea level rise and storm surge. The mean elevation in the City is 5.11 feet above mean sea level (MSL). Approximately 30% of the City is below three feet in elevation, and about 59% is below five feet. The highest areas of the City are predominantly in the northwest quadrant. With the exception of a few areas of higher ground, most of the City east of Highway 1 is low-lying. Figure 3 shows a digital elevation model of Hallandale Beach at 50 foot resolution.

NOAA SLOSH maps indicate Hallandale Beach could experience flooding from a Category 1 or 2 storm. In September 2017, the City experienced a storm surge of one to two feet from Hurricane Irma, then a Category 1 storm. Surge depths were similar to those predicted by the SLOSH model.

A Category 3 or above storm could cause extensive flooding up to three feet above ground level in Hallandale Beach, affecting areas near S. Ocean Drive, Golden Isles, Gulfstream Park and north of Sunset Park. A Category 4 or 5 storm could flood more than 50% of the City's area, with flood depths of six feet or greater in some areas. In the future, SLR may increase the effects of storm surge. Figure 5 shows predicted SLOSH Model inundation from a Category 3 hurricane impacting Hallandale Beach, based on current sea levels.

FIGURE 3: CITY OF HALLANDALE BEACH ELEVATION ABOVE SEA LEVEL



PROJECTS

GHG emissions from the City's energy use, transportation, waste and other activities are contributing to climate change. The City will reduce GHG emissions from its operations through energy, water, materials and fleet projects, and also take policy actions to reduce emissions community-wide.

In addition to mitigating its contributions to climate change, the City should also move to understand and adapt to some of the unavoidable consequences of climate change, such as flooding, intensifying storms, extreme precipitation and sea level rise. This includes identifying vulnerable areas and populations so the City can help mitigate the impacts. By identifying risks, improving infrastructure and educating citizens the City will ensure that it is adequately prepared. The City should also act to protect and enhance the natural systems that support a high quality of life in our community, now and into the future. The City also recognizes the need to project future impacts of climate change on the various geographic areas of the City and socio-economic groups of the community so that tailored policies may be created to help protect its most vulnerable members. The project below, including Develop a Vulnerability/Adaptation Assessment, Dune Protection Plan and Low Impact Development Standards, further expands on these concepts.

DEVELOP A VULNERABILITY/ADAPTATION ASSESSMENT

In order to thrive in the future, the City must understand its vulnerabilities to climate change and choose strategic and fiscally achievable options to mitigate and adapt to changing conditions.

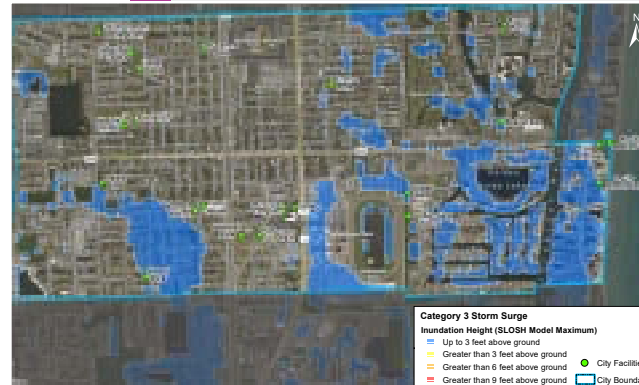
A Vulnerability and Adaptation Assessment will identify risks to City buildings, infrastructure, habitats and connections to vital services and resources such as storm shelters, transportation networks, schools, hospitals, landfills, utilities and groundwater. The Assessment will be based on data-driven heat, storm, precipitation and flood elevation scenarios modeled on predicted future conditions. It will also identify organizational risks to stakeholders, historically vulnerable areas and vulnerable populations, helping the City understand how demographics may shift as a result of sea level rise and other climate related factors.

Risks will be analyzed and prioritized based on probability, cost, spatial extent and time horizon. Best practices from other coastal South Florida communities will be compiled and evaluated for applicability to the City. Through a planning effort, potential adaptation and mitigation measures will be identified and screened via criteria including feasibility and cost, as well as social and environmental factors. These measures will be developed as projects to allow the City to adapt and mitigate risk.



NATURAL RESOURCES & RESILIENCE

FIGURE 4: SLOSH MODEL INUNDATION, CATEGORY 3 HURRICANE



The 2013 City of Hallandale Beach Vulnerability to Sea Level Rise Assessment Report identified major municipal infrastructure at risk of inundation under one and two foot Sea Level Rise (SLR) scenarios. Under a one foot of SLR scenario, the report found minor impacts to vulnerable infrastructure including to arterial roads around the municipal center/police station and limited flooding of approximately five acres or less throughout the City. Under a two foot SLR scenario, the report found up to 72 acres could be inundated throughout the city. Inundated streets could limit access to city hall and the Police department. Two City parks, and Fire Station 60 (located at 2801 East Hallandale Beach Boulevard) would also have limited access and/or flooding under this scenario. The Hallandale Beach Community Redevelopment Area (CRA) includes areas with elevations at or below sea level during both the one and two foot scenarios. In addition, bridge clearance would be affected under both scenarios.

It is important to realize these findings are based on SLR alone and do not factor in flooding which could occur from the additive effect of SLR and storm surge during extreme weather events.



Action



Deliverables from this assessment will include:

- Technical flood hazard mapping documentation and associated summaries of change in flood area and frequency for multiple types of flooding
- GIS data containing flood elevation surfaces, flood extents, flood depth grids and base topography
- GIS layers of assets attributed with flood vulnerability under multiple conditions as well as summary tables and discussion of vulnerabilities, highlighting key at risk assets
- Categorization of City facilities/infrastructure in terms of future risk, including a cost/benefit analyses
- Direct and indirect economic loss outputs for existing and future conditions
- Estimated change in shoreline recession rate, including assessment of potential impacts to recreation and nourishment intervals
- Discussion of social vulnerability and analysis of possible gentrification and demographic shifts related to vulnerability
- Discussion of community input and prioritization
- List of short and long-term implementation strategies

The resulting plan will help the City manage resources and prioritize investments to optimize operational continuity and minimize future risk. It will also help the City communicate risk and adaptation measures to the public. Development of the assessment will include public input through at least two community workshops.

Costs to develop the Vulnerability/Adaptation Assessment are estimated at \$86,000. This cost includes a unique community capacity building element. In February 2018, the City applied for a Resilient Coastline Program Grant from the Florida Department of Environmental Protection to fund this project. A decision regarding funding is expected in early 2018.

Direct economic benefits are not estimated as they will depend on the specific recommendations to be developed and require implementation of the resulting projects. However, adaptation and flood hazard mitigation in coastal Louisiana has shown a savings of \$4 of disaster recovery costs for every 1 dollar spent on elevation and flood-proofing. Important to this analysis is that the \$4 savings repeats in future disasters depending on the severity. It is not a one time savings. Completing the assessment will also help lower the City's CRS rating score, reducing the flood insurance premiums paid by residents through the National Flood Insurance Program (NFIP.)

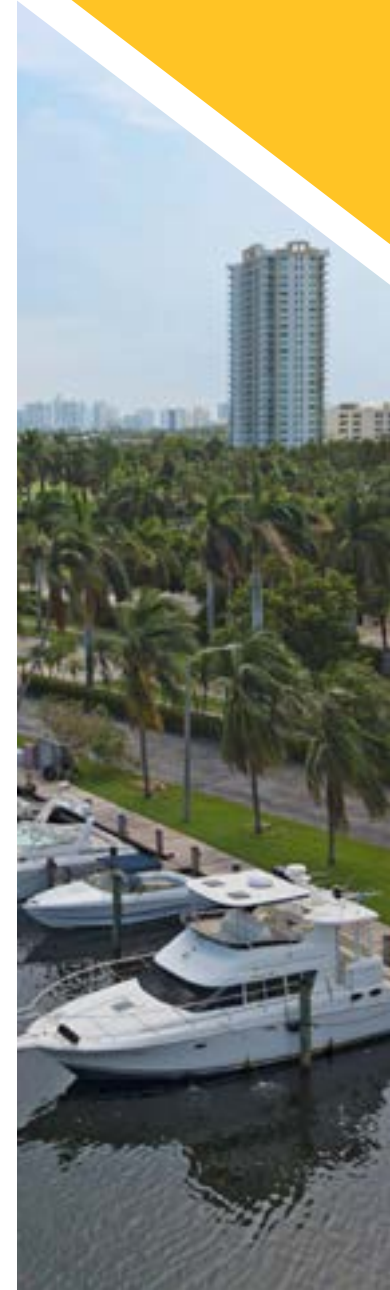
NATURAL RESOURCES & RESILIENCE

The City does not currently track renovation of public facilities to improve resiliency. In the future, the City plans will take the Unified Sea Level Rise Projection into account when upgrading sewage pump stations. The City's CP, Land Use Element, Objective 2.2 states, "The City shall direct populations away from High-Hazard Areas (HHAs) in concert with the established hazard mitigation strategies developed by Broward County. These areas correspond to Zone VE on FEMA's Federal Flood Insurance Rate Map (FIRM). Zone VE is defined as an area inundated by flood with a one percent annual chance of occurring and with a velocity hazard due to wave action. In Hallandale Beach, Zone VE areas are located along the coast east of S. Ocean Drive/A1A. The City requires minimum elevations for the first floor of new construction sites to exceed the 100-year still-water and wave-action base flood elevations shown in the FIRM for the City.

The City's Comprehensive Emergency Operations Plan (CEOP) governs the City's response to a hurricane or other disaster. The CEOP, which has recently undergone a major update, indicates areas east of the Intracoastal Waterway are vulnerable to storm surges during all hurricanes and should be evacuated. Areas east of Federal Highway should be evacuated in Category 3 or higher storms.



Action





Action

Develop < Plan

DUNE PROTECTION PLAN

The City's beaches provide recreational opportunities for residents and are an important draw for tourism. The dune system that supports them up is the City's first line of defense against storms, sea level rise and beach erosion. It is important that the City's primary coastal dunes are protected and restored so that the dunes will function to protect the beaches and preserve the many benefits they provide.

The City, in conjunction with Broward County, the State of Florida and the Federal Government, must improve resiliency of its dune system by creating a comprehensive Dune Protection Plan that will be included in future updates to the City's Comprehensive Plan. **The Dune Protection Plan should include:**

- Restore and expand the existing dune system
- Prevent dune loss and beach erosion
- Create a long term maintenance plan for the dune system
- Remove invasive species from public and private beach areas
- Engage coastal property owners to improve the dune system
- Increase public education and awareness of the importance of dune restoration and maintenance
- Identify funding for on-going beach renourishment and dune restoration projects
- Plan for the impacts of sea level rise

Developing the Dune Protection Plan (DPP) will involve evaluating best management practices from nearby beach communities, partnering with relevant organizations, developing an outreach and education strategy and holding community workshops to engage residents and businesses. Among other aspects, the DPP will address the design of the dune system, effective erosion control measures, recommended dune

vegetation and planting guidelines, impacts to wildlife, an implementation plan and a budget for improving the dune system. As the plan will be developed in-house by City staff, no additional or incremental costs are estimated for this measure. While difficult to quantify in dollars, benefits include protection of private property, infrastructure, commerce and natural resources.

The DPP will supplement the City's beach renourishment project. The City has been in communication with Broward County and the County estimates that the City's share of the re-nourishment will cost between \$2.3 million - \$3.12 million. The City has a sizable portion of this expenditure budgeted.

LOW IMPACT DEVELOPMENT STANDARDS

Low Impact Development (LID) takes advantage of all opportunities to maximize green space and promote natural storm water management through the use of plants and permeable materials. In more common terms, LID seeks to use more plants and fewer pipes, where feasible. These methods reduce pollution and improve the health of local waterways. This project helps to fulfill the vision shared by community members during the community workshops. Two of the top three suggested projects include improving water quality in the City and investing in green infrastructure to better manage stormwater. Proposed amendments to the City's Comprehensive Plan (New Policy 2.2.5 in the Coastal Management Element) also stipulate that the City shall incorporate LID into all new public projects within FEMA flood zones and the Coastal High Hazard Area.

Examples of LID practices include the use of bio-retention facilities, rain gardens, vegetated rooftops, rain barrels and permeable pavements. Benefits of LID include storm water management, more aesthetically pleasing green spaces as well as improved water quality and reduced pollution.



Action

To capture these benefits, the City will incentivize or require LID strategies using municipal code. City staff will research LID best practices to determine those most desirable and applicable in Hallandale Beach. Based on their recommendations, LID definitions and standards may be developed for City properties and right-of-ways or incorporated into development regulations, if warranted. No incremental costs other than staff time are expected for this project. The EPA report, "Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices," found that of 17 LID case studies analyzed, total capital costs associated with LID designs were 15% to 80% less than those for conventional development. Direct cost benefits are only part of the picture since LID typically results in ancillary benefits including better aesthetics, increased recreational opportunities, reduced stormwater runoff, decreased pollutant loads and reduced risk of sewer overflows. The flood abatement benefits have the potential to improve the City's Community Rating System (CRS) score (See "Next Steps" below), which could potentially reduce flood insurance premiums for residents and businesses.

FUTURE STEPS

As the City continues to successfully manage its natural resources and plans for the effects of climate change, opportunities will arise to build on accomplishments. Most of these incremental opportunities will have substantial value because the expanded programs will allow community members to maintain and enhance their lifestyles into the future. Others will lead to direct financial benefits to our citizens from measurable cost savings.

IMPROVE CRS CLASSIFICATION

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is an incentive program that gives participating communities discounts on flood insurance premiums when they take actions to reduce flood risks. The CRS has three goals:

- To reduce flood damage to insurable property
- To strengthen and support the insurance aspects of the NFIP
- To encourage a comprehensive approach to floodplain management

Under the program, lower CRS classes reflect less risk and are rewarded with higher discounts. Each point decrease in CRS class results in an additional five percent discount in premiums.

The City of Hallandale Beach was the first community in Broward County to secure a Class 6 CRS rating, which provides 20% reduction in rates for properties located within the flood zones and 10% reduction for properties outside the flood zone. Annual savings to residents and businesses were \$1,078,863 in 2014. If the City were able to improve its rating to Class 5, residents and businesses would benefit from a 25% reduction in insurance premiums. The City is already working to improve its CRS classification from Class 6 to a Class 5 rating, which would result in discounts to residents and businesses totaling approximately \$1.2 million per year. The City hired a consultant to help with this process, at a cost of about \$21,700. Additional discounts of approximately \$1.1 million annually would result from improving the score from a Class 5 to a Class 4. Over 10 years, avoided insurance costs could exceed \$12.8 million in net present value if this were achieved.

Improving the City's CRS score will involve hiring a consultant to manage the CRS application process, identifying projects and policies that could result in credit through the CRS system, planning and implementing appropriate projects, collecting supporting information, and submitting an application to the NFIP. To achieve the benefits of improving the CRS score, investments in staff time, consultant fees (estimated at about \$22,000) and planning/implementation costs will be needed. Further study is needed to estimate and validate these costs as part of a capital improvement project identification process that could result in a five year program for enhancing resiliency. Similarly the cost of this project would also be informed by the results of a Vulnerability and Adaptation Assessment.



MANGROVE RESTORATION

Mangroves are specially adapted trees or shrubs growing in dense thickets in low-lying coastal areas that are flooded at high tide. Prior to development and urbanization, the southeast coast of Florida had many natural areas of mangroves. Mangroves have many important benefits, ranging from aesthetics to wildlife habitat and flood control. They also resist erosion and wave action, helping to stabilize shorelines.

The City of Hallandale Beach has proposed planting mangroves at the corners of the Golden Isles Bridges, along Layne Boulevard south of Church Street, and along the seawall north of the marina on the west side of Three Islands Boulevard. Trails along the shoreline adjacent to the mangrove plantings would allow the public to benefit from the restored natural area with recreational activities such as birdwatching. To implement the project, the City would hire a consultant to perform surveys, advance soil borings and handle design and permitting for the proposed project. There is also a need to work with nearby property owners regarding their concerns on the project.

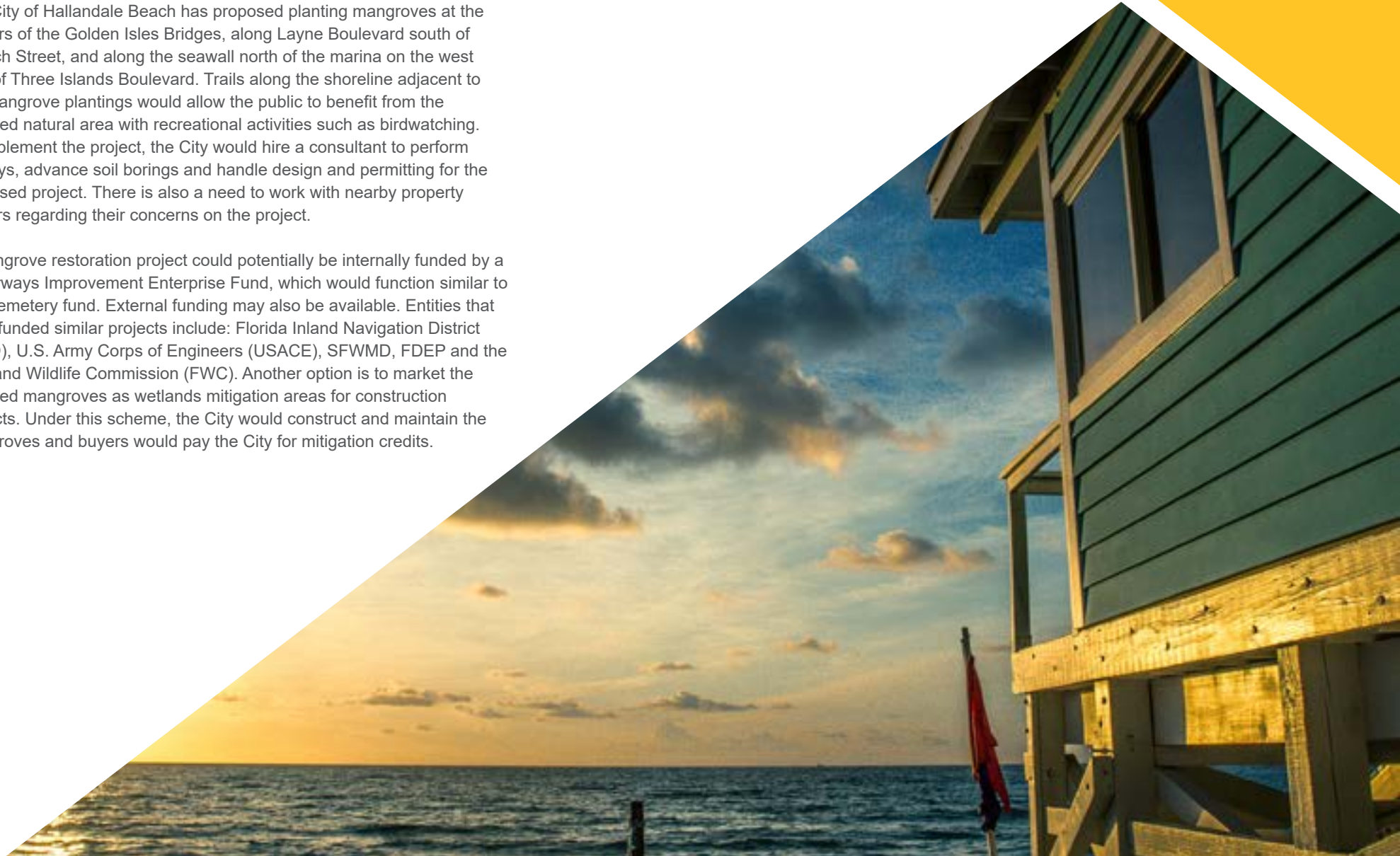
A mangrove restoration project could potentially be internally funded by a Waterways Improvement Enterprise Fund, which would function similar to the Cemetery fund. External funding may also be available. Entities that have funded similar projects include: Florida Inland Navigation District (FIND), U.S. Army Corps of Engineers (USACE), SFWMD, FDEP and the Fish and Wildlife Commission (FWC). Another option is to market the restored mangroves as wetlands mitigation areas for construction projects. Under this scheme, the City would construct and maintain the mangroves and buyers would pay the City for mitigation credits.

IMPLEMENT ADAPTATION ACTIONS

Once the City has completed a vulnerability and adaptation plan, implementation actions and capital improvements that can significantly reduce risk should be analyzed and programs developed. The results of a Vulnerability and Adaptation Plan, as well as assessment of CRS can inform development of a capital improvement project identification process and a five-year plan for funding and implementing prioritized projects.



Action





Action

EDUCATION & OUTREACH

The success of the Sustainability Action Plan depends on the commitment and support of City staff and the people who live, work and play in Hallandale Beach.

Well-developed education and outreach projects will help communicate the challenges the City faces and the value of investing time and money in responding to them. We all share a deep pride in the diversity, resilience and community spirit of Hallandale Beach and it is important for all to realize the role of sustainability and resiliency in preserving these values for future generations.

Hallandale Beach should expand programs to educate and reach both City staff and community members. The City reaches those interested in learning more about its efforts through the Green Initiatives Newsletter and public events like Greenfest. The City website and social media pages also provide an expanding resource for residents to learn about the Green Initiatives. A lofty but achievable goal is that every stakeholder recognizes the word “sustainability” just like all citizens understand the words “traffic” or “parking.” With knowledge comes commitment.



INTEGRATE SUSTAINABILITY INTO EMPLOYEE TRAINING AND INCREASE EMPLOYEE PARTICIPATION

- NPV: \$2,000
- ROI: 5%
- Contribution to Goal: 100%
- Lead Department / Division: Public Works
- Responsibility: Green Initiatives Coordinator

COMMUNICATIONS PLAN

- NPV: \$0
- ROI: ∞*
- Contribution to Goal: 100%
- Lead Department / Division: Public Works
- Responsibility: Green Initiatives Coordinator

DEVELOP GREEN EVENT POLICIES

- NPV: \$0
- ROI: ∞*
- Contribution to Goal: **
- Lead Department / Division: Public Works
- Responsibility: Green Initiatives Coordinator

*For projects with low or no cost, the return on investment is mathematically infinite, denoted by the symbol: ∞

**The contribution of this projects to goal cannot be calculated at present but will be calculated as projects and project ideas are further developed.

PROJECTS

Outreach is an ongoing activity that includes all the City's stakeholders. Three projects to further bolster outreach and education have been developed as part of this plan, including: Integrate Sustainability into Employee Training and Increase Employee Participation, Communications Plan and Develop Green Event Policies. All are low- or no-cost, but are expected to have a major impact on the City's culture. Implementing these projects will empower employees to make government more efficient and engage citizens and visitors in Hallandale Beach's sustainability initiatives.

INTEGRATE SUSTAINABILITY INTO EMPLOYEE TRAINING AND INCREASE EMPLOYEE PARTICIPATION

A sustainable organization is defined by its culture. Currently, the City of Hallandale Beach employees have different levels of experience, expertise and commitment with respect to sustainability. Training for all employees and new hires will develop a common understanding of the City's goals and the actions being taken to achieve these goals. Employees will not only understand how to help implement the City's sustainability vision, but will be empowered to apply their own creativity to identifying solutions.

Training will focus on orienting employees to the City's sustainability vision and communicating its past performance, goals, projects and implementation strategy. It will also emphasize actions employees can take at work and home to save energy, water, and reduce waste. The program could also include incentives to encourage employees to participate in green events in the community.

Staff time would be required to complete this project, along with modest costs of approximately \$3,500 per year for training materials and incentives. Benefits of feedback, education and awareness campaigns have been shown to produce energy savings of up to 10% with comparable benefits in the City's other focus areas. This project assumes just a fraction of such savings (0.2% annually) are achieved from greater employee awareness of the city's resource consumption and adherence to sustainability policies.

COMMUNICATIONS PLAN

To more effectively engage residents, businesses and other stakeholders in the City's Green Initiatives Program, the City will develop a comprehensive sustainability communications plan that identifies its diverse audiences and the appropriate media and methods to reach them. It will also identify our messaging, goals and strategies. The plan will lay out marketing strategy, responsibility and content used to reach staff, residents,

businesses, vendors, visitors and others, maintaining multiple channels for information dissemination. It will also include provisions for tracking education and outreach efforts to ensure the City's objectives are met.

To develop the plan, the green initiatives coordinator will research best practice case studies from other municipalities and develop an outline for the Plan, coordinating with the IT department, City manager's office and other Departments as necessary. As the Plan will be developed by City staff, no additional costs are estimated for this project. Benefits include more effective use of City outreach funds, improved tracking of results, improved community engagement and greater understanding of the importance of our sustainability projects.

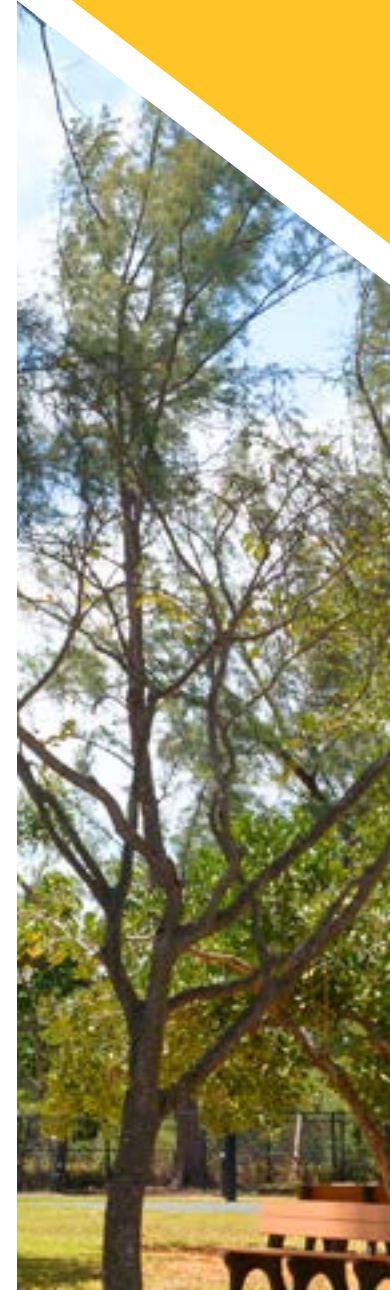
DEVELOP GREEN EVENT POLICIES

Hallandale Beach hosts 50 to 60 events of all types throughout each year, including events hosted by the parks, police, fire, human service, public works, and procurement departments. The City will develop a Green Events Policy to reduce the environmental impacts of City events and sustainability messaging will be incorporated. This policy will visibly demonstrate the City's commitment to sustainability by reducing waste and GHG emissions, increasing recycling, conserving resources, and encouraging the use of alternate transportation to reach City events.

To develop the Green Events Policy, the green initiative coordinator will research best practices from municipalities, colleges, universities and the private sector. A Green Event Policy outline will be completed in collaboration with the event coordinator. The Policy will be reviewed and refined by the Public Works Director and Parks Director before finalization and approval by the City Manager. City Commission input will be incorporated in the policy.



Action



Inspire < People



Action



The policy will focus on eliminating and replacing single-use items used at events such as plastic water bottles and bags, expanded polystyrene (aka Styrofoam), straws, plastic table cloths etc. It will include clear and concise guidelines for eliminating waste and harmful products.

The Green Initiatives and Events Coordinators will create an outreach plan for City staff, residents and vendors. Outreach methods may include email, social media, website and print materials. The coordinators will track the dollars spent on sustainable versus non-sustainable products at events and audit waste and recycling generated at each event. The benefits of using environmentally-preferable products will also be tracked and reported.

This is a no cost initiative requiring only staff time, with no additional costs expected. Event materials identified as harmful will be replaced by alternatives at no net incremental cost. Benefits will include reducing waste, litter and pollution and demonstrating the City's commitment to sustainability to event attendees. The key to success will be incorporating these guidelines in special event permit processing.

FUTURE STEPS

Outreach is crucial for building a culture of continual sustainability improvement for the City of Hallandale Beach. The City will foster sustainable behavior among stakeholders through commitments, prompts, norms and incentives. Research has shown that when people commit to a particular action, they are more likely to follow through. Prompts are reminders – visual or auditory – to encourage engagement in sustainable behaviors. Norms are unwritten rules that people follow because they are established by the group.

Incentives are rewards for exhibiting sustainable behavior. Some initial areas for communications that foster sustainable behavior as the City takes the next steps include:

INSTITUTIONALIZE SUSTAINABILITY MANAGEMENT AMONG STAFF AND CITIZENS

The City will establish an internal “Green Team” staffed by champions from all of the City's functional areas. Champions are committed individuals who are willing to walk the walk and talk the talk. The Green Initiatives Coordinator will be the “champion in chief” to head up the enthusiastic team. This internal Sustainability Committee will be a formalized outgrowth of the collaboration among staff that has occurred over the course of this planning effort. The Sustainability Committee, orchestrated by the City's green initiatives coordinator, would be tasked with the responsibility of implementing and tracking the Sustainability Action Plan.

The City will impanel a Sustainability Advisory Board to assist in the development of plans and policies to enhance the sustainability of the City as a whole; educate, empower and encourage residents and organizations to become more sustainable; assist in tracking implementation of the SAP and recommend and assist in planning City-wide sustainability events. The board will consist of five regular members and one member under the age of 18 at the time of appointment.

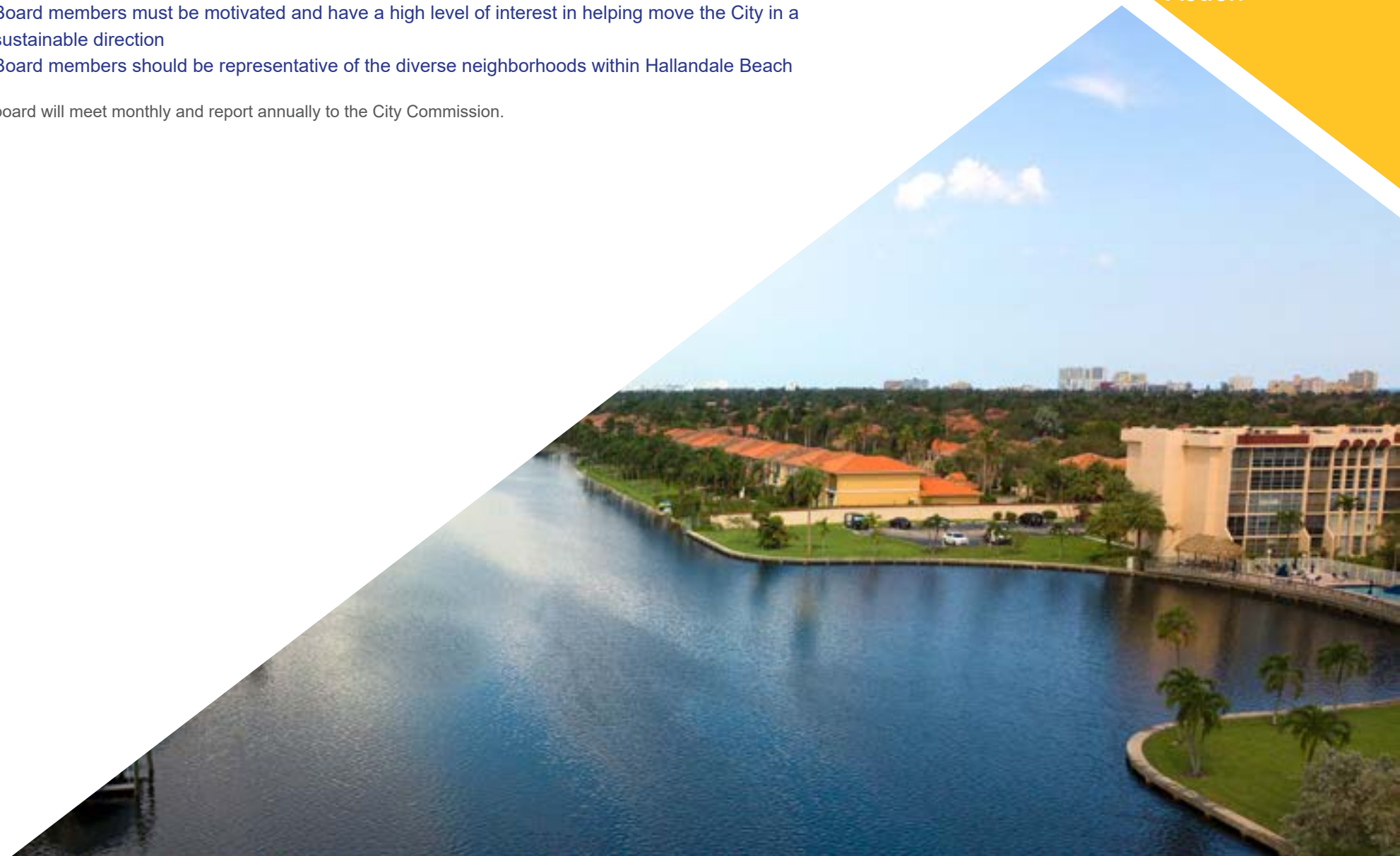


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Members will meet the following criteria:

- No less than the majority of the board shall be residents of the City of Hallandale Beach
- Any members not residing in the City shall own a business, be employed full-time or attend a school full-time in the City
- Board members should have experience in the field of sustainability (resource conservation, smart growth/land planning, waste reduction, transportation, energy efficiency and renewables, green building, food security, resiliency or community outreach etc.) OR the desire to become familiar with and embrace these concepts
- Board members must be motivated and have a high level of interest in helping move the City in a sustainable direction
- Board members should be representative of the diverse neighborhoods within Hallandale Beach

The board will meet monthly and report annually to the City Commission.



SUSTAINABILITY BRANDING

The City has approved a Green Initiatives logo in order to highlight the City's sustainable initiatives and projects. Any City program or policy that espouses the principles of sustainability may use this logo in the future. The portfolio of projects will represent a clearinghouse of sustainable government operations that visibility communicate the City's investments to the public.

Project managers interested in developing and implementing a sustainability project could apply to the newly created City Sustainability Committee in order to use the logo. The logo will be awarded to projects that meet specific sustainability performance criteria. Projects that earn this logo could receive priority treatment during the project approval and budgeting processes.

This program will operate similarly to Broward County's "Seal of Sustainability" program, which demonstrates the County's commitment

to sustainable operations. A catalogue of qualifying projects is maintained on the Broward County website, and the seal is affixed to qualifying projects, such as the County's propane-fueled "TOPS" mini-buses.

GREENHOUSE GAS MITIGATION EDUCATION AND OUTREACH CAMPAIGN

The City will create an education and outreach campaign to engage citizens and businesses in GHG reduction efforts, beginning with a survey, to understand community members' attitudes and behaviors concerning climate change action. The goal will be to identify common concerns, raise awareness and find sustainability champions to support the City's efforts to go green. Using survey results as a baseline knowledge assessment, the City will create a public outreach campaign that engages and educates residents on the City's GHG mitigation, resilience and sustainability efforts.



Action





Action

FUNDING & EVALUATION

Sustainability requires investment. By focusing on quick wins with big returns, the City can leverage its success and prove that low-impact, efficient and responsive government makes financial sense. These successes can help pave the way for other, lower ROI projects, which are no less important for community members and the environment.

The City has already begun investing in cost-effective solutions that will reap long term economic, social and environmental rewards. However, more direct investment is required. The City will also focus on attracting external resources, such as low-interest loans, grants and incentives from federal, state, local and private sources. Many of this SAP's projects are eligible for such support. With the newly established grants development office this focus is now possible.

Sustainability requires evaluation and as projects are implemented, progress must be measured at regular intervals to ensure that the projects are performing as planned. In some cases, the City may make adjustments or course corrections to ensure desired results are obtained. It is necessary to measure the success of a sustainability program in order to manage it effectively. It has been said that, "you are what you measure".

The STAR Community Rating System (STAR) is the nation's first voluntary, self-reporting framework for evaluating, quantifying, and improving the livability and sustainability of U.S. communities. Used as an evaluation tool, STAR facilitates meaningful comparisons of cities' sustainability performance, addressing social, economic and environmental aspects of the community.

As a first step towards certification, the SAP Project Management Team used STAR to benchmark, Hallandale Beach's sustainability progress to three similar communities (Pinecrest, FL, Park Forest, Illinois and Broward County, Florida). The team also performed a feasibility assessment to determine if the City is ready to pursue STAR certification. The results show that Hallandale Beach is comparable to its regional peers, with the potential to earn a 3-STAR rating. City Commission acceptance of this SAP will authorize the path to STAR certification for the City to begin.

See the Appendix for the results of benchmarking and the Star Communities Certification project in this section for the City's next steps towards STAR certification.



UTILITY MANAGEMENT SYSTEM

- NPV: \$19,000
- ROI: 36%
- Contribution to Goal: 90%
- Lead Department / Division: Innovation Technology
- Responsibility: IT Director

REVOLVING FUND

- NPV: 0%
- ROI: ∞^*
- Contribution to Goal: **
- Lead Department / Division: Finance
- Responsibility: Finance Director

COMPLETE A GREENHOUSE GAS INVENTORY

- NPV: -24,000
- ROI: -100%
- Contribution to Goal: *
- Lead Department/Division: Public Works
- Responsibility: Green Initiative Coordinator

STAR COMMUNITIES CERTIFICATION

- NPV: -\$13,000
- ROI: -100%
- Contribution to Goal: 0%
- Lead Department/Division: Public Works
- Responsibility: Green Initiatives Coordinator

*For projects with low or no cost, the return on investment is mathematically infinite, denoted by the symbol: ∞
**The contribution of this projects to goal cannot be calculated at present but will be calculated as projects and project ideas are further developed.

PROJECTS

The City will strive to achieve the financial performance projected for the portfolio of projects included in this plan. It will also plan to establish new internal mechanisms for ensuring that these projects have the required resources to move forward. Sustainability and resiliency must become embedded in the annual budget development process. The revolving fund project will help make this happen.

A well-designed evaluation process will make the entire sustainability program more effective, and will also allow the City to communicate its progress to a wide variety of stakeholders. Evaluation requires a comprehensive but focused system for collecting, managing and analyzing data, a schedule, means of obtaining feedback from stakeholders and a provision for continual improvement. Three projects will help advance these concepts, including Utility Management System, complete a Greenhouse Gas Inventory and STAR Communities Certification.

UTILITY MANAGEMENT SYSTEM

Integrating utilities (electric, water and other commodity billings) into a software solution or database can track, trend and report on utility use and help verify results from energy efficiency investments. Typically, this can result in energy savings ranging from 1-10% from prioritizing investments, identifying erroneous billings and learning of anomalies before they become costly.

For this project, the City will utilize software tools to manage the City's FPL energy utility bills on a monthly basis. The effort will include auditing bills, tracking usage and costs, benchmarking facility performance, tracking the results of energy savings projects, analyzing trends and reporting on performance. Over time, the City will expand the tool to include other facilities-based utilities and services, including water and waste.

Such a system enables much more creative control of the City's resource use. For example, it would enable departments to be assigned a "budget" for resource use and to be "charged" for utilities. It also supports the accounting systems required to implement a revolving fund that will support long-term investment in sustainability projects at the department level.

Direct economic benefits of this project are conservatively estimated at one percent of electricity expenditures, with a net present value of \$19,000 over the 10 year project life. Other benefits include facilitating sustainability reporting and program management, and the potential to identify additional

cost savings through use of the tool. Implementing the project will require selecting and procuring a utility management solution. The City will also populate the free, online ENERGY STAR Portfolio Manager with facility utility data. Costs are estimated at \$50,000 for an off-the-shelf Utility Management Solution, including implementation, configuration, customization, interfaces and training, with an additional annual software licensing fee of \$2,500 per year.

REVOLVING FUND

Measures designed to save resources can be highly cost effective. However, these measures require sustained investment to fully realize benefits. A revolving fund is a method of providing on-going access to capital for "green" projects. Initially, the revolving fund is "seeded" with capital. Sources include appropriations, grants, rebates and savings from existing projects. The fund invests in resource conservation projects with repayments from savings going back into the fund and thus helping to finance new projects. Cost savings realized from high ROI projects are leveraged to help fund low ROI, but environmentally or socially impactful projects. This approach reduces the amount of funding needed from the City's General and Enterprise Funds.

The projects included in this SAP will return over \$8 million in revenue and avoided costs over 10 years. The revolving fund will allow these returns to be reinvested in other green initiatives as time goes on, allowing continual improvement and expansion of the sustainability program.



Action





Action

The City should establish a revolving fund for the recommendations included in this plan. A Revolving Fund Management Committee will develop and administer policies, approved by the City Commission, for fund management, including criteria for eligible energy and water efficiency projects and financial performance. Project performance will be monitored and verified. **The following steps will be needed:**

- Establish a Revolving Fund Management Committee
- Create an accounting and financial procedures plan
- Develop guidelines designating which projects qualify for funding
- Identify funding sources for seed capital
- Establish procedures for tracking performance of funded projects
- Establish procedures for reinvesting project savings in new projects

No additional costs besides staff time will be needed to set up the revolving fund.

COMPLETE A GREENHOUSE GAS INVENTORY

A Greenhouse Gas (GHG) Inventory is an essential element of the City's sustainability baseline which will help the City to understand the magnitude and sources of GHG emissions. The GHG inventory will also allow Hallandale Beach to measure progress in GHG mitigation going forward and will identify the most significant emissions sources so the City can develop policies to address the issue. Completing an inventory will be the first step towards honoring the City's U.S. Climate Mayors commitment to uphold the Paris Climate Agreement, which was adopted on August 16, 2017 by Resolution 2017-91. This project will allow the City to create a targeted set of consistent policies, strategies and projects aimed at reducing emissions and establish goals for emissions reduction.

In late 2017, the City applied for grant funding to conduct the inventory through the Community Foundation of Broward's ECO Broward Grant. This proposal was unsuccessful, however staff will resubmit for funding in future grant cycles. Once funding is secured, the City will issue a Request for Quotes and select a qualified firm to develop the inventory for both local government operations and the community as a whole. The inventory will be based on established protocols such as those developed by the International Council for Local Environmental Initiatives (ICLEI), using web-based inventory software such as ICLEI's ClearPath tool. It will require a substantial data collection effort which will be integrated with sustainability data collected for the SAP.

The completed inventory will allow the City to benchmark GHG emissions against peer cities, forecast emissions trends under business as usual scenario and set informed and achievable emissions reductions goals. Costs of developing the inventory are estimated at \$24,500. Benefits include allowing the City to pinpoint facilities and infrastructure with above-average carbon footprints, potentially exposing inefficiencies that could lead to cost savings. The GHG Inventory will also give the City a reference point for evaluating the carbon mitigation benefits of potential sustainability projects to determine those opportunities that offer the best value to the City.




STAR COMMUNITIES CERTIFICATION

STAR is premised on a framework of sustainability goals, objectives and evaluation measures. This framework is comprised of 526 inductors within the following areas:

- Climate and Energy
- Built Environment
- Economy and Jobs
- Education, Arts and Community
- Equity and Empowerment
- Health and Safety
- Natural Systems

STAR rates communities on a 5-point scale and awards leadership certifications for 3-STAR, 4-STAR and 5-STAR ratings. Certified STAR communities are part of a select group. Currently, there are nearly thirty 3-STAR communities nationwide, and five in Florida, including Monroe County, the City of St. Petersburg and the Village of Pinecrest. Broward County and West Palm Beach are currently the only 4-STAR communities in Florida, and there are only four 5-STAR communities nationwide.

These include:



Baltimore, Maryland
Cambridge, Maine
Northampton, Maine
Seattle, Washington



Action





Action

Hallandale Beach has completed the initial feasibility assessment step towards STAR certification. Based on the results of this initial assessment, the City should be able to achieve a 3-STAR rating. This project will take the next steps towards achieving STAR certification by collecting and analyzing data and compiling application materials.

Once the City is ready to report, it must subscribe to the STAR Full Access Package to access the full suite of tools and resources. After that, the City will create a certification team composed of internal staff members or an external green team comprised of community members. Over the following months, the City will align existing City policies and programs with the Rating System, gather data and enter it into STAR's online reporting platform and submit the online application for verification by STAR. Once awarded, the STAR Community Rating is valid for four years, after which the City will have the opportunity to rectify and potentially improve its rating. This effort is important not only for sustainability reasons but also for future financing of major projects. Rating services like Moody's, Standard and Poor's and Fitch are all considering making sustainability and resiliency an element of establishing credit ratings for city debt. This is a very important factor in establishing interest rates.

The annual cost of subscription to the STAR Full Access Package is \$1,000, plus a one-time verification fee of \$3,000. The certification process will be completed by City staff, possibly with the help of a community green team. Direct economic benefits have not been estimated at this time, but the process will help the City track and evaluate performance and communicate progress to stakeholders. The City will also have the opportunity to learn from and adopt best management practices included in the STAR framework. Achieving a 3-STAR rating would result in positive press and greatly enhance the City's sustainability brand.

FUTURE STEPS

SET GHG EMISSIONS REDUCTION TARGETS

Once a GHG Inventory has been completed, the City should adopt specific targets for GHG emissions reductions both for government operations and major private pollution sources. The goals should align as much as possible with those set by other local governments in the South Florida region, as greenhouse gases don't respect political boundaries. Miami-Dade and other Compact counties follow the GHG emissions reduction goals set by the U.S. Cool Counties Climate Stabilization Declaration in 2008. These targets include an 80% emissions reduction by 2050 from 2008

levels. In order to achieve this goal, Miami-Dade County's set interim targets of 20% emissions reduction from 2008 levels by 2020 and a 10% reduction over every five-year period through 2050. Broward County has set a goal to reduce emission 15% from 2015 levels by 2020 and 80% by 2050.

NON-MARKET VALUATION OF SAP PROJECTS

Many environmental and social benefits are not recognized by the economy. For example, clean air and water are not traded on the stock exchange. The value of healthy and productive employees is not typically included when considering investment in a building renovation. As a result, environmental and social benefits may be undervalued and decisions regarding sustainability projects may not accurately reflect their true value to the community.

Economists often label the economic value of environmental and social goods and services as "non-market" values because they are not traded in markets. All projects in the SAP have non-market value. Some projects consist mostly of non-market value. Examples include the plan's Land Use and Transportation and Natural Resources and Resilience projects. Estimating non-market values could dramatically change the relationship between the perceived benefits and costs of these projects.

There are many methods for calculating non-market values. One increasingly widespread framework for evaluating one aspect of non-market value is the social cost of carbon. The social cost of carbon is an estimate of the long-term damage done by a ton of carbon dioxide to agricultural productivity, human health and property as a result of climate change. However, due to modeling and data limitations, it does not include all social costs.





Action

As the City's sustainability management matures, use of non-market values should be considered. For example, as part of a proposed greenhouse gas inventory, each SAP project's expected contribution to reduced carbon dioxide emissions could be estimated. These avoided emissions could be assigned a value based on the social cost of carbon. Other non-market values could also be estimated, such as the benefit of reduced air or water pollution, increased productivity or reduced traffic congestion. In doing so, the City should take care to establish clear standards for including estimates of non-market values into its projects that can achieve wide acceptance among its stakeholders.

SUSTAINABILITY FEES

The City receives revenue from a variety of fees associated with its regulatory authority, particularly with respect to compliance with its codes and standards, as well as approval of development proposals. A portion of this existing revenue, or new fees, could be allocated to staff, projects, programs and other initiatives that improve the City's economic, social and environmental performance.

The Village of Pinecrest funds sustainability projects with fees collected through its permitting system. The Expedited Permit Program charges a higher fee to review building permits. Revenues from this program are earmarked for the Village's Sustainability Fund. The City of Jacksonville has established a citizen board that manages a fund sourced from environmental compliance violations. The board awards grants for community sustainability projects on a competitive basis. Miami Beach's Green Building Ordinance requires participants to post a Sustainability Fee Bond equal to five percent of the total construction value. Participants are refunded the fee based on their level of compliance with the City's green building requirements. Only the highest levels of attainment receive the full refund. Non-compliance results in the City retaining 100% of the fee. Fees collected directly fund the City's sustainability efforts.



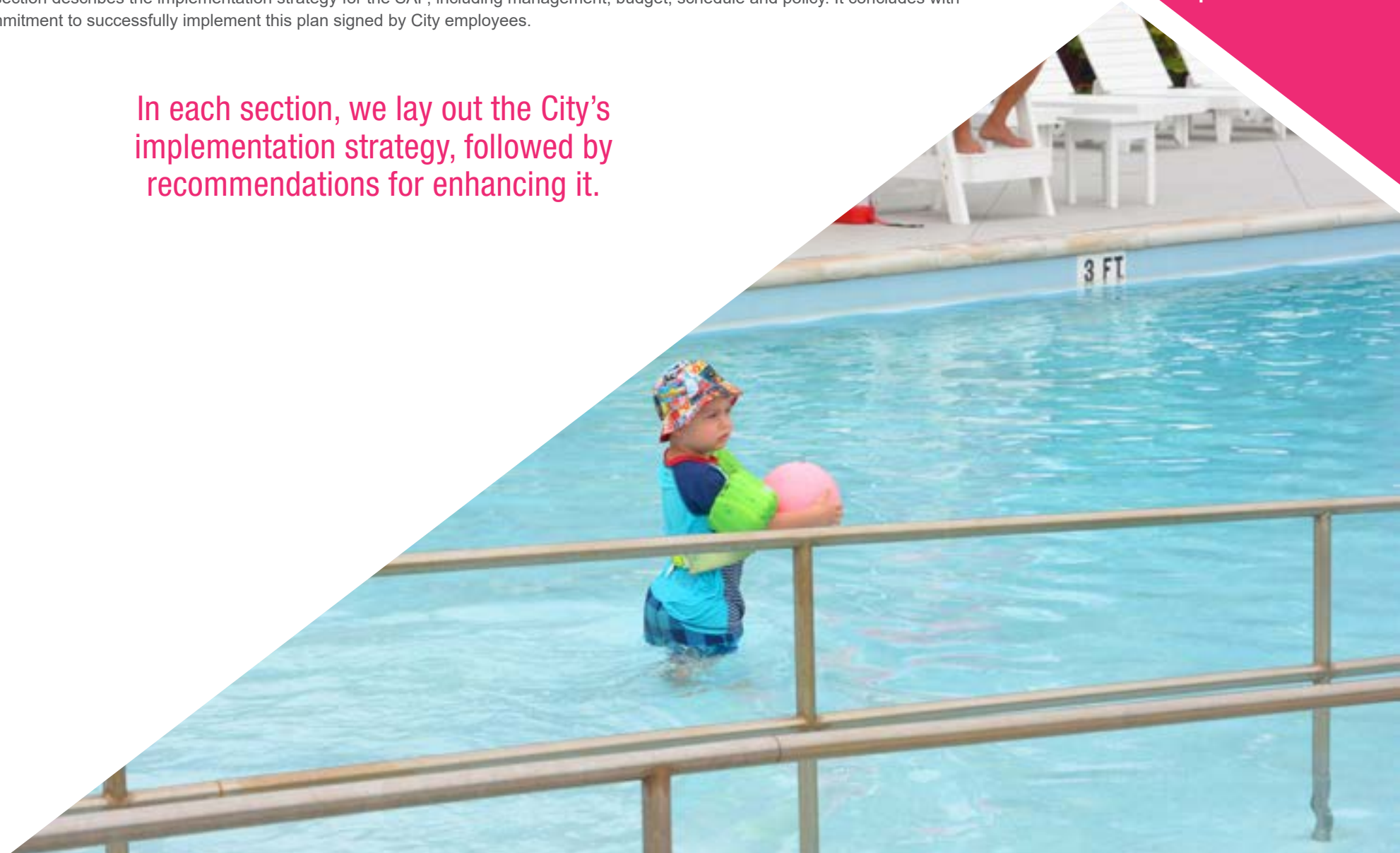
Implementation

The Sustainability Action Plan contains 27 projects in six focus areas to reduce the City of Hallandale Beach's environmental footprint, while expanding services over the next five years. Together they have the potential to generate revenue or cost avoidance of \$7 million and a net benefit of over \$2.2 million over a period of 10 years. The next step is to manage, budget, schedule and commit to realizing these projects. In some instances, the City may have to implement policy reforms to ensure that this SAP is a success.

This section describes the implementation strategy for the SAP, including management, budget, schedule and policy. It concludes with a commitment to successfully implement this plan signed by City employees.

In each section, we lay out the City's implementation strategy, followed by recommendations for enhancing it.

Implementation



MANAGEMENT

With the backing of the City Commission and the City Manager, implementation of the City's Sustainability Action Plan will be overseen by our Green Initiatives Coordinator. Each project is associated with a detailed management strategy. These define the project objective, targets, strategies, actions and schedules. The collective impacts on City resources and contribution towards goals have been estimated. Required investments have been projected, along with avoided costs, revenues and measures of life-cycle economic performance. The lead City department and project manager have been identified and will be accountable for results. Sustainability project management forms containing this information are included in the Appendix. The key here is that accountability, financial separation into measurable outcomes and individual responsibility have all been established. The next step is policy making by the City Commission.

One of the projects, Integrate Sustainability into Employee Training and Increase Employee Participation, aims to increase awareness of this plan and its projects among all City staff so that they can play a role in

bringing it to life. This buy-in is critical once the policy is established and will ensure that traditional silos that inhibit teamwork are broken down and eliminated.

While this plan includes 27 projects estimated to generate about \$7 million in revenue / cost avoidance and \$2.2 million in net benefits over 10 years, more projects will have to be developed and implemented to achieve short- and long-term goals. Accordingly, this plan is intended as a living document. The SAP is designed so that increasingly refined awareness of the City's sustainability performance leads to ideas for next steps, which are developed into additional projects. This is a continual improvement process of planning, doing, checking and acting that characterizes the best-run organizations in the world. In today's world of disruptive technologies, the City of Hallandale Beach has the opportunity to disrupt the inhibitors to sustainability and resiliency and set the stage for future generations.

Continual updates to this SAP will help ensure that a culture of continuous improvement takes hold and that the SAP's goals are achieved.

Implementation

Achieve < Goals



KEY PERFORMANCE INDICATORS

The Utility Management System project will establish systems for gathering, tracking and reporting on key project data. It is the first step towards achieving one of this plan's goals: measuring and monitoring 50% of sustainability key performance indicators by 2022. To guide implementation of projects and goals, key performance indicators (or KPIs) must be established. KPIs are measurements used to evaluate the success of a project. As a group, they offer a rigorous method of assessing progress on the Sustainability Action Plan.

Based on the projects included in the plan, Table 6 lists KPIs and their annual unit of measure. Some KPIs are relevant to multiple projects. Some projects do not have KPIs at this time. For example, the Composting project involves completing a study, from which new projects and KPIs may be generated in the future.

Implementation

TABLE 6: RECOMMENDED KEY PERFORMANCE INDICATORS

Project	Unit of Measure	Projects
Streetlight Energy Use Intensity	Kilowatt-hours per Fixture	LED Streetlights
Streetlight Cost Intensity	Dollars per Fixture	LED Streetlights
Interior Lighting Density	Watts per Square Foot	LED Interior Lighting
Facility Energy Use Intensity	Thousand British Thermal Units per Square Foot	Solar Thermal Systems, Existing City Building Commissioning, HVAC Controls, Expanded Service Hours Work Week
Facility Energy Cost Intensity	Dollars per Square Foot	Solar Thermal Systems, Existing City Building Commissioning, HVAC Controls, Expanded Service Hours Work Week
Vehicle Cost Per Mile	Dollars per Vehicle	Electric Vehicles and Infrastructure
Vehicle Energy Use	Gaseous Gallons Equivalent	Electric Vehicles and Infrastructure, Expanded Service Hours Work Week
Vehicle Fuel Economy	Miles per Gallon	Electric Vehicles and Infrastructure, Increase Fuel Economy
Facility Water Use Intensity	Thousand Gallons per Square Foot	Indoor Water Fixtures and Fittings Efficiency, Expanded Service Hours Work Week
Facility Water Cost Intensity	Dollars per Square Foot	Indoor Water Fixtures and Fittings Efficiency, Expanded Service Hours Work Week
Vehicle Density	Vehicles per Full Time Equivalent Employee	Right Size Fleet
Vehicle Use Intensity	Vehicle Miles	Right Size Fleet
Reuse Water Rate	Reuse Gallons per Potable Gallons	Expand Reuse Water Projects
Irrigation Intensity	Gallons per Irrigated Acre	Irrigation Efficiency
Diversion Rate	Tons Diverted per Total Tons of Waste	Increase Community-wide Waste Diversion
Green Purchasing Rate	Dollars of Green Purchases per Total Purchases	Green Purchasing Program
Bicycle Level of Service	LOS Rating	Build-out Bicycle and Pedestrian Infrastructure
Pedestrian Level of Service	LOS Rating	Build-out Bicycle and Pedestrian Infrastructure
Employee Training Rate	FTEs Trained per Total FTEs	Integrate Sustainability Into Employee Training and Review

SUSTAINABILITY DIVISION

Increasing the number of staff dedicated to sustainability management will be required to oversee a plan grounded in continual improvement. The current Green Initiatives Coordinator role could be initially re-conceptualized as a two-person division within the Public Works Department, consisting of a senior management role (e.g. “sustainability manager”) and a junior support role (e.g. “sustainability coordinator”). A third staffer would be co-managed by the Sanitation Division and be responsible for managing materials minimization for the City. Several South Florida municipalities with mature sustainability programs have such an organizational structure, including Broward County, Fort Lauderdale, Miami Beach, North Miami and Coral Gables. The costs of these additional two staffers is included in the Increase Community-wide Waste Diversion project.

SUSTAINABILITY COMMITTEE

Under the Green Initiatives Coordinator’s leadership, 36 City staff have been involved in the development of this plan over a 10 month period. Of these, 25 were assigned to working groups corresponding to the plan’s six focus areas and took a direct role in developing the projects in our portfolio.

This structure could be formalized by establishing a standing Sustainability Committee. The committee would be composed of City staff representing the major functional areas of the City. Reflecting the process used to develop this plan, committee members could be organized by the focus areas of the plan, helping to oversee implementation of projects and fostering ideas for new projects.

The committee would function as a liaison between the proposed Sustainability Division and the City’s departments. It would also assist the Sustainability Division with responding to the city manager and City Commission and communicating with the public.

SUSTAINABILITY ADVISORY COMMITTEE

Close to two dozen citizens participated in the preparation of this plan. Support of the Hallandale Beach community will be critical to its successful implementation.

Empaneling a group of qualified and interested citizens can help further prioritize the City’s Sustainability Action Plan, make recommendations for implementation, help develop new initiatives and communicate with citizens and City leaders.

The Sustainability Advisory Committee could be selected by the City Commission, City Manager or future Sustainability Manager or some

combination of the three. Typically, members are selected based on relevant expertise and their ability to represent interested parties from the community. The board could hold regular, public meeting organized by the City’s future Sustainability Manager.

Similar institutions have been created at peer South Florida municipalities, including Broward County, Fort Lauderdale, Hollywood, Sunrise, Coral Gables, Miami Beach, South Miami, Key West, among others.

INTEGRATION INTO STRATEGIC PLAN

The City’s 2017-2019 Strategic Plan includes specific initiatives to be undertaken within each of the City’s departments over a three-year period. The plan includes goals, strategies to accomplish them, measure progress and an estimate of fiscal impact. The goals and projects in the SAP, which include KPIs, fiscal impact and responsible departments, should be incorporated into the present planning cycle for the City’s 2020 – 2022 Strategic Plan.

Implementation





Fullfill < Vision

Implementation

INTEGRATION INTO THE REGIONAL CLIMATE ACTION PLAN

The South Florida Regional Climate Change Compact (Compact) developed the Regional Climate Action Plan (RCAP) to guide coordinated climate action among the region's municipalities. The RCAP contains recommendations, guidelines for implementation, and best practices for local governments to act in concert with the regional agenda for greenhouse gas emissions reduction and climate resilience. The City of Hallandale Beach should aspire to regional leadership on climate action and intends to utilize RCAP as a benchmark for its success.

The most recent version of RCAP was released in December 2017. It contains approximately 76 recommendations for municipalities that are relevant to Hallandale Beach. According to the Compact, Hallandale Beach has completed 29 recommendations, or 38% of the total. An informal analysis indicates that the contents of this plan validates completion of about 35 additional recommendations, growing the total to approximately 64 recommendations completed, or 84% of total recommendations. Completing and implementing a Vulnerability Assessment and Adaptation Plan (VAAP), as recommended in this SAP, will be credited with a large majority of this increase.

As this living document develops, the City intends to continue to coordinate its planning with the Compact and the RCAP with the aim of completing 100% of its recommendations between 2022 and 2040.

REPORTING

This plan includes a suite of short-term goals and a portfolio of projects designed to blaze a path towards achievement. Accordingly, it is important to report on the City's progress as it moves towards 2022, when its short-term goals should be achieved.

Many cities that have established plans similar to this SAP report regularly on progress.

For example, the City of Fort Lauderdale published its Sustainability Action Plan in 2010. In 2015 it published a progress report that detailed goals it had achieved, the projects it had completed and the work that remains.

Aided by the KPIs established by the SAP long with the goals and projects within the Funding & Evaluation focus area that are designed to systematically measure them, the City plans to periodically publish updates to the SAP. The updates will report on progress towards achieving goals and the status of SAP projects.

These updates will also fulfill the intent of this plan to be a living document. The updates will provide the opportunity for new projects to be added to the SAP, as needed, to fulfill the City's vision to improve the quality of life in our resilient coastal community now and into the future.



FUNDING

The estimated budget for implementation of the 27 projects included in the SAP over five years is \$3.8 million, growing to \$5.4 million by year 10. The first year cost of the plan is \$340,000, growing to about \$1.3 million in 2019, then slowly leveling off thereafter.

Not all projects require investment. Nearly one third of the projects in the portfolio are designed for implementation with no or low cost. This is accomplished by integrating sustainability into expenditures that are already planned, or by accomplishing the project using in-house effort. These include Increase Fuel Economy, Right Size Fleet, Expanded Service Hours Work Week, Green Purchasing Programs, Bikeshare, Dune Protection, Low Impact Development, Communications Plan, Develop Green Event Policies, and Revolving Fund.

Implementation

TABLE 7: ESTIMATED SUSTAINABILITY ACTION PLAN BUDGET

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total
LED Streetlights	\$64,333	\$64,333	\$64,333	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$193,000
LED Interior Lighting	\$0	\$0	\$0	\$41,000	\$41,000	\$0	\$0	\$0	\$0	\$0	\$82,000
Solar Thermal Systems	\$0	\$0	\$14,000	\$10,500	\$10,500	\$0	\$0	\$0	\$0	\$0	\$35,000
Existing Building Commissioning	\$80,000	\$0	\$0	\$0	\$0	\$80,000	\$0	\$0	\$0	\$0	\$160,000
Electric Vehicles & Infrastructure	\$0	\$27,864	\$27,864	\$0	\$0	\$0	\$0	\$0	\$0	\$12,500	\$43,229
Increase Fuel Economy	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Indoor Water Fixtures and Fittings Efficiency	\$0	\$10,000	\$12,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$22,000
HVAC controls	\$75,000	\$86,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$161,000
Right Size Fleet	\$32,513	\$32,513	\$32,513	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$97,539
Expand Reuse Water Projects	\$88,000	\$443,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$531,000
Expanded Service Hours Work Week	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Irrigation Efficiency	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$0	\$0	\$0	\$0	\$0	\$75,000
Increase Diversion of Residential Waste	\$0	\$550,000	\$550,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$3,200,000
Green Purchasing Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Composting	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,000
Bikeshare	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Build out Bicycle and Pedestrian Infrastructure	\$0	\$10,000	\$170,000	\$280,000	\$270,000	\$0	\$0	\$0	\$0	\$0	\$730,000
Develop a Vulnerability/Adaptation Assessment	\$0	\$86,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$86,000
Dune Protection	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Low Impact Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Integrate Sustainability into Employee Training & Increase Employee Participation	\$0	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$3,500	\$31,500
Communications Plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Develop Green Event Policies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Management System	\$50,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$77,000
Revolving Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Complete a GHG Inventory and Set Reduction Targets	\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
STAR Communities Certification	\$0	\$4,000	\$1,000	\$1,000	\$1,000	\$1,000	\$4,000	\$1,000	\$1,000	\$1,000	\$15,000
Total	\$339,820	\$1,345,185	\$828,185	\$654,000	\$644,000	\$387,500	\$310,500	\$307,500	\$307,500	\$295,000	\$5,419,189

The plan is designed to pay for itself within five years. Several of the projects generate revenue, others eliminate expenditures. These savings grow over time, resulting in over \$8 million in benefits over ten years. After accounting for all costs, which total just over \$4 million, the City will realize a net benefit of about \$3.3 million. A full accounting of costs, benefits and net results by project over ten years is included in the appendix.

The plan includes a project Revolving Fund that aims to harness the benefits generated, for example, by energy efficiency projects that reduce utility bills. The fund tracks such savings and returns a percentage back to the fund to help support new projects.

A successful Revolving Fund requires an initial investment in order to generate returns that can be capitalized by the SAP in the future. One goal of this plan is to fund it with 50% internal funds and 50% external funds by 2022.

The next step is to identify how each project in this plan will be funded; either internally, by identifying the specific funding source, or externally, by applying for grant funds, entering into a public private partnership, or other cooperative methods. Some projects may be funded by a combination of internal and external sources. Two of the projects in this plan have already been identified as good candidates for grant funding, Develop a Vulnerability/Adaptation Assessment; and Complete a GHG Inventory and Set Reduction Targets. Many other projects in this plan may also be eligible for external support. Examples are included in Table 8. This is not meant to be an exhaustive list, since availability of grants is subject to change.

Implementation

TABLE 8: SELECTED EXTERNAL FUNDING OPPORTUNITIES

External Funding Source	Projects
City of Hallandale Beach Revolving Fund (Project FE2)	All projects
Public-Private Partnerships	LED Streetlights, LED Interior Lighting, Solar Thermal Systems, Indoor Water Fixtures and Fittings Efficiency, HVAC Controls
Florida Power and Light Business Energy Efficiency Rebates	LED Streetlights, LED Interior Lighting
Community Foundation of Broward ECO Broward Grant	LED Streetlights, LED Interior Lighting, Solar Thermal Systems, Existing City Building Commissioning, HVAC Controls, Increase Community-wide Waste Diversion, Composting Feasibility Assessment, Build-out Bicycle and Pedestrian Infrastructure, Develop a Vulnerability/Adaptation Assessment, Integrate Sustainability into Employee Training and Increase Employee Participation, Utility Management System, Complete a Greenhouse Gas Inventory and Set Reduction Targets, STAR Communities Certification
Florida Department of Environmental Protection Coastal Partnership Initiative	Develop a Vulnerability/Adaptation Assessment
Broward County MPO Unified Planning Work Plan	Electric Vehicles and Infrastructure, Build-out Bicycle and Pedestrian Infrastructure
South Florida Regional Planning Council Collaboration	Electric Vehicles and Infrastructure, Develop a Vulnerability/Adaptation Assessment
FEMA Pre-Disaster Mitigation Grant Program	Develop a Vulnerability/Adaptation Assessment
FDACS Florida Small Community Energy Efficient Lighting Grant Program	LED Streetlights, LED Interior Lighting
Florida Department of Economic Opportunity Small Cities Community Development Block Grant	Expand Reuse Water Projects, Build-out Bicycle and Pedestrian Infrastructure
National Oceanic and Atmospheric Administration Broad Agency Announcement	Develop a Vulnerability/Adaptation Assessment
South Florida Water Management District Cooperative Funding Program	Indoor Water Fixtures and Fittings Efficiency, Expand Reuse Water Projects, Irrigation Efficiency
Funders' Network for Smart Growth and Livable Communities Partners for Places Grant	Electric Vehicles and Infrastructure, Composting Feasibility Assessment, Build-out Bicycle and Pedestrian Infrastructure, Develop a Vulnerability/Adaptation Assessment, Complete a Greenhouse Gas Inventory and Set Reduction Targets, STAR Communities Certification
Kresge Environment Program	Composting Feasibility Assessment, Develop a Vulnerability/Adaptation Assessment, Complete a Greenhouse Gas Inventory and Set Reduction Targets, STAR Communities Certification

SCHEDULE

Table 9 depicts the schedule for implementation of SAP projects. Each project's expected year of initiation and completion is shown. The relative intensity of investment in each year is shown by the value of the color - the darker the value the larger the investments.

Implementation

TABLE 9: PROJECT SCHEDULE

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
LED Streetlights										
LED Interior Lighting										
Solar Thermal Systems										
Existing Building Commissioning										
Electric Vehicles & Infrastructure										
Increase Fuel Economy										
Indoor Water Fixtures and Fittings Efficiency										
HVAC controls										
Right Size Fleet										
Expand Reuse Water Projects										
Expanded Service Hours Work Week										
Irrigation Efficiency										
Increase Diversion of Residential Waste										
Green Purchasing Program										
Composting										
Bikeshare										
Build out Bicycle & Pedestrian Infrastructure										
Develop a Vulnerability/Adaptation Assessment										
Dune Protection										
Low Impact Development										
Integrate Sustainability into Employee Training & Increase Employee Participation										
Communications Plan										
Develop Green Event Policies										
Utility Management System										
Revolving Fund										
Complete a GHG Inventory & Set Reduction Targets										
STAR Communities Certification										

POLICY

This SAP requires new policies be developed and implemented.

In addition to incorporating goals and projects into the City's management, budget and project management processes, updating and amending Hallandale Beach's Comprehensive Plan, Code of Ordinances and Design Guidelines Manual provide opportunities to underscore the City's commitment to implementation.

COMPREHENSIVE PLAN

Cities are increasingly incorporating sustainability into their Comprehensive Plans (CP). The most effective tend to incorporate sustainability into the core values of the CP and throughout each of the elements at the Goal, Objective and Policy levels.

The City has begun this process by collecting most of the existing sustainability goals, objectives and policies that occur throughout the CP in the Conservation Element. These include items related to all of the focus areas included in the SAP planning effort.

In the City's 2017-2019 Strategic Plan, the Development Service department has committed to developing a new element of the CP dedicated to preparing for climate change. This follows on recently proposed amendments to the Coastal Management Element, including goals to: reduce the City's Community Rating System (CRS) score; identify vulnerabilities to sea level rise; develop adaptation strategies in collaboration with the County and the Southeast Florida Regional Climate Change Compact; and establish Adaptation Action Areas (AAAs) within the City. AAAs designate areas susceptible to flooding and vulnerable to the related effects of sea level rise for the purpose of prioritizing funding for planning and infrastructure.

A summary of the Sustainability Action Plan, including an overview of vision, goal and projects, will be included in the Conservation Element of the Comprehensive Plan. Individual components will also be incorporated into the CP under the relevant elements. Table 10 includes recommendations for incorporating individual components into specific elements of the Comprehensive Plan.

Implementation

TABLE 10: RECOMMENDED SAP COMPONENTS FOR INCORPORATION INTO THE COMPREHENSIVE PLAN, BY ELEMENT

Comprehensive Plan Element	SAP Components to Be Incorporated
Introduction	Vision
Transportation	Transportation Goal Bikeshare, Build-out Bicycle and Pedestrian Infrastructure Projects
Sanitary Sewer, Solid Waste, Stormwater Management, Potable Water & Natural Groundwater Aquifer Recharge Element	Water, Materials Minimization & Recycling Goals Increase Diversion of Residential Waste, Low Impact Development Project
Coastal Management	Infrastructure, Flood Hazard, Coastal Habitat Goals Develop a Vulnerability/Adaptation Assessment, Dune Protection Plan Project
Conservation Element	Electricity, Fuel, Development, Evaluation, Training and Communications Goals
Capital Improvements	LED Streetlights, LED Interior Lighting, Solar Thermal Systems, Indoor Water Fixtures and Fittings Efficiency, HVAC Controls, Expand Water Reuse Projects, Irrigation Efficiency, Build out Bicycle & Pedestrian Infrastructure

CODE OF ORDINANCES

Incorporating Sustainability Action Plan components into the City's Code of Ordinances (CO) provides a high level of accountability for implementation. In addition, some of the SAP's projects require inclusion in the CO for success:

- This SAP's near term goals should be adopted into the CO by Resolution, Ordinance or through other legal instruments.
- Several of this plan's projects could be supported by development of performance specifications, including LED Streetlights, LED Interior Lighting, Indoor Water Fixtures and Fittings Efficiency, and Irrigation Efficiency. Adopted into the Procurement Code, these performance specifications would ensure that future facility design, construction or renovation would exhibit the energy and water saving characteristics emphasized by these projects.
- As part of project the Green Purchasing Program project, standards will be developed for the purchase of IT equipment, consumables, durable goods, and cleaning products and materials. These standards will enhance ecological sensitivity, promote the health and safety of staff and citizens and reduce operating expenses. Once staff has developed the policy it should be adopted into the Procurement Code (Chapter 23).
- Similarly, the project Increase Fuel Economy involves changes to procurement practices within the City's vehicle fleet. This project requires replacement of qualifying vehicles with models demonstrating at least 50% greater fuel economy. As developed, fuel economy standards for purchase of new vehicles should be adopted into the Procurement Code.

Implementation

Go  Beyond



Implementation

Several projects envision new processes or services that should be enabled by the Code of Ordinances:

- The Expanded Service Hours Workweek project is an analysis of changing the present five day work week into a four day work week with extended hours. Careful review will be necessary to ensure that the need to serve the public is not diminished and that staff productivity remains high. Best practices to predict outcomes will be used before this program is recommended, even on a trial basis.
- The Electric Vehicles and Infrastructure project will install electric vehicle support equipment (EVSE), such as electric vehicle charging stations at locations accessible to the public, such as the City Hall Complex. Policies will have to be developed regarding use of parking spaces associated with the EVSE as well as how the City plans to bill for electricity.
- The Bikeshare project will solicit proposals from third-parties to establish dockless bikeshare programs in the City. Often, several operators are active in the same City. Regulations for these companies as well as for users of their services will have to be established for the program to be successful.
- A definition of Low Impact Development should be included in the Code of Ordinances to support the Low Impact Development Standards project. As standards are developed for private development, they will need to be codified as well.
- The Develop Green Event Policies project will establish guidelines and requirements for City-managed events.
- The Revolving Fund project will establish a financial mechanism for sustainability projects. New policy will be required to enable the Budget and Program Monitoring Department to track the revenue or avoided costs of projects and recapitalize all or a portion of those benefits to fund new projects. The guidelines developed for the Revolving Fund should be incorporated into the annual budget process and be available in the CAFR.
- One of the next steps identified within the Land Use and Transportation focus area is to modify the City's Green Building Program (Section 8-37). Presently, it sets standards for new construction/major renovation of large commercial and multifamily buildings by reference to voluntary, third-party programs, such as LEED. Modifications to this program would establish prescriptive targets within these third-party programs consistent with the focus areas of this plan, such as energy efficiency, water conservation and waste minimization. Modifications would also extend high-performance design, construction and operations standards to civil infrastructure, landscapes or existing buildings with reference to third-party programs modified to achieve prescriptive targets. Initially these modification would only apply to municipal projects. Over time, the requirements would be extended to large commercial and multifamily structures.

The Appendix includes six sections that provide further detail on the contents of SAP:

- The Baseline section includes analysis of the City's performance in each of the SAP's six focus areas. Using 2016 data, it establishes the baseline performance against which all future progress will be measured.
- The Benchmarking section compares this baseline performance with other cities. It features use of the STAR Communities rating system, which is a third-party standard for evaluating the sustainability performance of municipalities using over 500 economic, social and environmental indicators.
- The Community section documents the results of two public meetings held during the development of the SAP to integrate stakeholders' interests into the plan.
- The Projects section features a detailed management plan for each project included in the SAP.
- The Budgets section includes detailed accounting of costs, benefits and net financial impact of each projects included in the SAP over a ten year period.

RESOURCE CONSERVATION & EFFICIENCY
ENERGY USE

Energy use includes power to heat, cool, light and operate facilities and infrastructure.

The Hallandale Beach community as a whole used 492 million kilowatt-hours of electricity in 2016 at a cost of over 51 million dollars. The majority of community use occurs in the commercial sector (52%), followed by residential use (46%). City government use is relatively small (<two percent) and industrial use is close to zero (Figure 1). The Commercial sector includes multifamily housing, which is common in the City. Accordingly, the community's commercial energy use is higher than the state average, while its industrial use is much lower than average. From 2014 to 2016 usage has grown about four percent, while expenditure has decreased four percent, reflecting a reduction in the cost of electricity.

Data was not available on utility delivered or decentralized fuel consumption (e.g. natural gas, propane). This assessment assumes these fuels do not make up a significant proportion of overall energy use, as is the case state-wide.

FIGURE 1: HALLANDALE BEACH ELECTRICITY USE, 2014-2016*



Excluding back-up generators, non-fleet City operations are 100% electric. Based on recent data and a subjective grouping of City operations FPL accounts, water utilities use half of the City's energy, followed by the City's buildings (25%), streetlights (14%) and recreational facilities (nine percent). While buildings use more electricity than streetlights, streetlights cost the City more (Figure 2). Unlike other end uses, streetlight costs include the amortized cost of poles and fixtures, as well as electricity use.



*City totals do not include streetlights, estimated at 1.3 million kWh per year. Because it is an estimated value, it does not change from year to year.

FIGURE 2: CITY ENERGY USE AND COST BY ACCOUNT GROUPING*



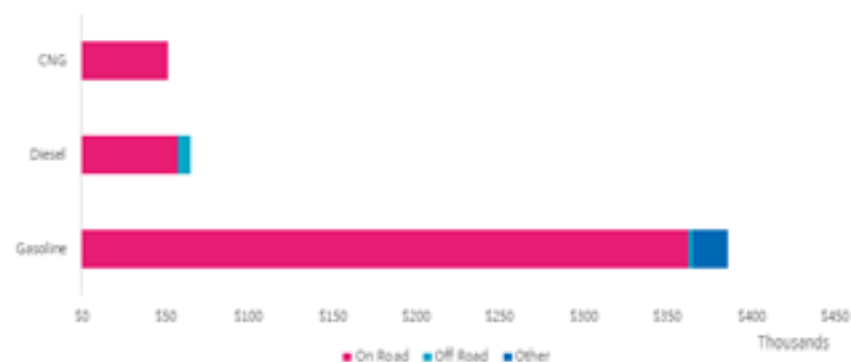
The state of Florida spends less on energy efficiency and saves less from the energy efficiency programs it does have relative to revenue and sales than the U.S. median. In 2014, the Florida Public Service Commission approved requests by utilities to significantly reduce the level of energy efficiency they must offer to end-users under the Florida Energy Efficiency and Conservation Act. In 2015, the state ranked 49 of 50 states in the share of energy produced from renewable resources.

Data is not currently available on the energy efficiency and renewable energy performance of the Hallandale Beach community. Citizens have access to energy efficiency programs offered by Florida Power and Light (FPL), which is the exclusive provider of electricity to the City. The City offers free LED luminaries and smart power strips to residents. Residents have access to Property Assessed Clean Energy Financing, which offers capital for energy efficiency and renewable improvements. The East Broward Solar Co-op recently offered cooperative purchasing of solar energy for Hallandale Beach residents. Cooperative purchasing may be available through this program in the future.

In 2014, the City entered into a Performance Contract with Siemens, which attracted about \$5.5 million in private investment in City facilities. Roughly 12 percent of this investment was dedicated to energy efficiency improvements in City facilities. Data on the results of this contract is not yet available, but will be in the future.

The City recently reached an agreement with FPL to replace existing streetlights with energy efficient Light-Emitting Diode (LED) luminaries.

FIGURE 3: FLEET FUEL EXPENDITURES BY FUEL AND VEHICLE TYPE



Through its Comprehensive Plan (CP), the City is committed to enforcing the Florida Building Code, including its Energy Code. This commitment is furthered by requiring green building practices (see Land Use Regulation).

The majority of the City's fleet is on-road (80%). Of these, over 80% are light duty (vehicles with Gross Vehicle Weight Rating <10,000 pounds), which includes passenger vehicles and light trucks.

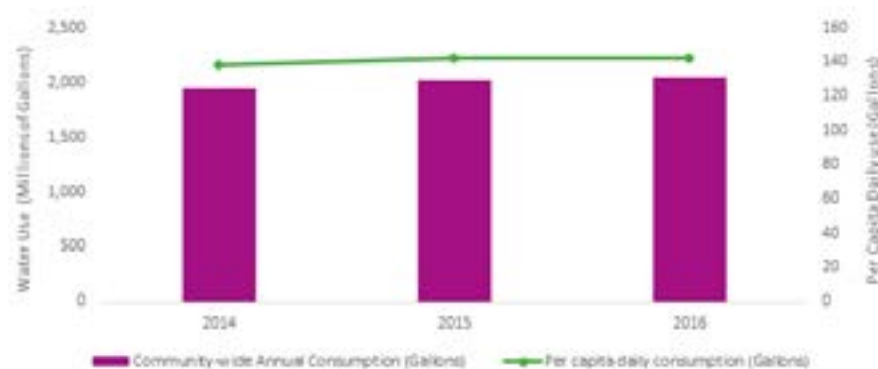
The average age of the fleet is approaching eight years. Gasoline vehicles/equipment tend to be newer and diesel vehicles older.

For all on-road vehicles, the annual number of vehicle miles traveled (VMT) is small, averaging less than 5,000 miles per year. While this may be due to the relatively small area of the municipality, it is also due to the high number of low-mileage vehicles in the fleet. About two thirds of on-road vehicles traveled less than 12,000 miles in a year.

While at least two City employees own an electric/plug-in electric vehicle, no such vehicles or associated infrastructure are currently used in the fleet. Two new, publicly accessible electric vehicle charging stations are planned as part of the redevelopment of Bluesten Park and the Main Fire Station. Other alternative fuels, such as propane or biofuels (e.g. ethanol, biodiesel) are not used.

The City has about 200 light-duty vehicles of model year 2011 or older, when the rate of increase of fuel economy began accelerating due to new Federal Corporate Average Fuel Economy standards.

FIGURE 4: COMMUNITY WATER USE TRENDS



The City operates a water utility that provides water to nearly all areas within the City limits. Since 2007, the City has observed significant reductions in water consumption, due to water restrictions imposed by the South Florida Water Management District. More recently, however, community water consumption in Hallandale Beach has increased by six percent. This is partially due to population increase, but per capita consumption has also grown by three percent since 2014. Figure 4 shows community-wide water annual consumption and per capita daily use for FY2014, 2015 and 2016.

The City recognizes that reducing water consumption is a key strategy for meeting the needs of current and future residents. Ultra-low flow fixtures are required for new construction and irrigation is restricted to once per week. Xeriscaping using native plants and use of reclaimed water is encouraged (City Ordinance 2011-14). Water customers are charged an increasing block rate for consumption and, through a partnership with Broward County, the City offers rebates for low-flow toilets. The City also waives the building permit fee for use of these toilets.

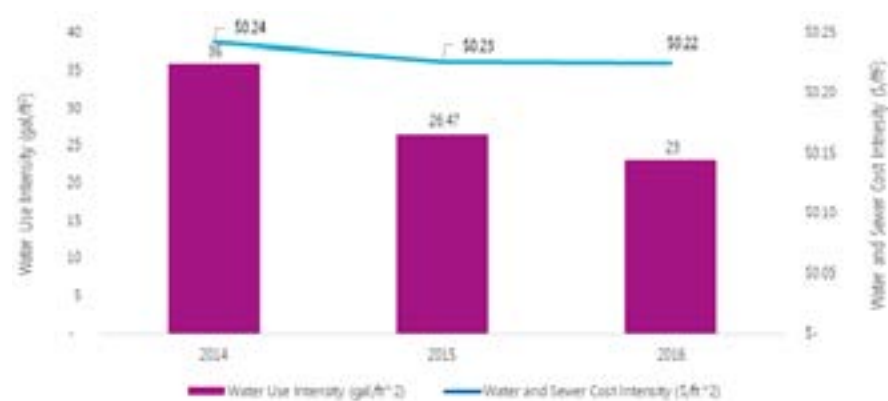
The City operates 41 water accounts for its facilities. In FY2016, these facilities used 4.26 million gallons (MG) for indoor uses and 18.42 MG for irrigation, at a cost of \$23,665 and \$42,222 respectively. Water use in facilities shows a declining trend from 2014 to 2016, however the combined water and sewer cost increased from \$6.90 to \$9.91 per 1,000 gallons. The cost for irrigation water increased from \$2.50 to \$2.70 per 1,000 gallons over the same period.

RS&H, Inc., the SAP consultant was able to match selected accounts to City facilities to evaluate Water Use Intensity (gallons per square foot of building space) and Water/Sewer Cost Intensity. Intensity measures all comparisons while controlling for growth (e.g. in the number of facilities). Figure 5 shows a slight declining trend in these indicators from 2014 to 2016.

ALTERNATIVE WATER USE / IRRIGATION

City Ordinance 2011-04 establishes mandatory, year-round restrictions on landscape irrigation to conserve water across the community.

FIGURE 5: WATER AND SEWER USE AND COST INTENSITY FOR SELECTED FACILITIES, FY2014 – FY2016



The City of Hallandale Beach has a Reuse Water Systems Policy for developers. This policy states that all new developments and/or substantial Improvements shall install a reuse water system (purple pipe) for irrigation that can service the entire development. The City has established routes for the major distribution (transmission) lines of the reuse water system, which is constructed of purple PVC pipe to distinguish it from potable systems.

Hallandale Beach participates in the Broward County NatureScape Irrigation Service (NIS) Interlocal Agreement. The goal of the NIS program is to achieve water savings and protect water quality through more efficient landscaping practices. Under the agreement, NIS conducts evaluations, makes recommendations, and conducts follow-up evaluations at City facilities and parks. The City has saved 10 million gallons and \$13,500 per year through this program. NIS reports provided by the City indicate few if any City properties currently use reuse water for irrigation.

GREEN PURCHASING AND CLEANING

Chapter 23, section 23-2 of the City's Municipal Code establishes Hallandale Beach's Procurement Department. One of its purposes is "to ensure that the city purchases recycled and other environmentally preferable products whenever the products meet the price and performance requirements of the city." Currently, purchasing authority is effectively decentralized, with individual City departments making many of their purchases independently. This approach may present a challenge to implementing green purchasing standards throughout City operations.

Hallandale Beach did not provide a green purchasing plan or any schedule of environmentally preferable products. The City has included environmental criteria in contracts for custodial services. A new green cleaning policy is currently being developed by staff.

The City has proposed an internal administrative policy which would prevent City funds from being spent on expanded polystyrene (Styrofoam) food service articles. This would also ban their use by contractors of City beach concessions.

LOW IMPACT DEVELOPMENT (LID)

Low Impact Development (LID) is a type of Green Infrastructure (GI) that involves managing stormwater runoff and improving water quality by incorporating vegetation into infrastructure designs. LID designs can have multiple benefits at little if any additional cost. Broward County has GI goals which are promoted and implemented through the NatureScape program. The City is currently evaluating strategies to encourage developers, residents and businesses to retain additional stormwater beyond the amount already required on site, with a reduction in stormwater utility costs as a bonus.

MATERIALS MINIMIZATION & RECYCLING

The City of Hallandale Beach Solid Waste Division provides fully-automated residential collection for municipal solid waste (MSW), and recycling, serving approximately 4,728 residential accounts on a weekly basis. Currently, residential garbage, or MSW containers, are the same size as the recycling containers, which may disincentivize residents from increasing the proportion of waste that is recycled. The Division also provides waste collection services for approximately 43 Multifamily residences and 5 commercial accounts. MSW and recycling are transported to the Waste Connections of Florida transfer station in Pembroke Park. MSW is further transported to the John E. Drury (JED) landfill in Orlando, approximately 180 miles from Hallandale Beach.

The City does not own or operate any landfills.

Other commercial accounts are serviced by private haulers. In FY 2016-2017, the City's permitted haulers included: Bicon, Inc., Lopefra Corp., Medley Metal Recycling, Panzarella

Waste & Recycling Services, Republic Services, Inc., Sunshine Recycling Services, Tropical Sanitation, Waste Connections, Waste Management, Waste Pro, and World Waste Recycling.

Yard waste (i.e. green waste materials and bulk items) is picked up under a contract with Waste Management. Yard waste is transported to the Monarch Hill Renewable Energy Park in Pompano Beach. The Monarch Hill facility generates electricity from methane gas produced by decomposing waste, powering approximately 9,000 homes annually.

In FY2016, Hallandale Beach generated 25,455 tons of MSW, 1,323 tons of recyclable materials, and 4,476 tons of yard waste. The City's MSW generation rate was nine percent above the national average of 2,600 lbs/household⁸. Hallandale Beach's community-wide diversion rate for 2016 was 19.4%, significantly lower than the national recycling rate of 34.6% and Florida's statewide recycling goal of 75% for the year 2020. The single family residential diversion rate is close to five percent. This very low rate leaves ample room for improvement, with the potential for the City to earn substantial recycling revenues as the diversion rate increases.

The City earns a rebate for recyclables of \$28 per ton (through a contract with Waste Connections of Florida), amounting to approximately \$37,000 in 2016. There is currently no composting program for the City. In 2016, the City paid \$49.85 per ton in solid waste tipping fees.

Hallandale Beach does not track waste collected at City Facilities by weight, so waste/recycling estimates are based on the number of containers at each facility and their pickup frequency, assuming each container was 80% full at pickup. In 2016, City Facilities generated 833 tons of MSW and 128 tons of recyclables for a 13% diversion rate. Table 1 summarizes waste management for City facilities and community-wide.

TABLE 1: WASTE MANAGEMENT SUMMARY, 2016

Metric	Hallandale Beach Facilities	Community-Wide
Bulk/Yard Waste (tons)	Not Provided	4,476
Garbage (tons)	833	25,455
Recycling (tons)	128	1,323
Diversion Rate	13%	19.4%
Recycling Rebate @ \$28/ton	\$3,574	\$37,037

Residents are assessed a monthly charge for waste pickup (averaging approximately \$21 per month). Multifamily and Commercial customers are charged waste and recycling fees that vary by container size and pickup frequency. These fees average \$12.51 per cubic yard (cy) and \$14.94/cy for Multifamily and Commercial, respectively. The City is investigating selling the Commercial and Multi-Family Solid Waste Collection Operation in FY18/19, while retaining residential commercial collection. This will allow the City to reduce expenditures and increase revenue (via working to increase single family recycling rates), improving the Solid Waste Division's financial performance. Monetizing is likely to affect the fees for solid waste and recycling. In other South Florida cities where waste management is outsourced, incentives for recycling are often not provided. In some cases, cities must pay a fee for recycling, in addition to losing potential recycling revenue.

The City spent \$8,678 on hazardous waste disposal in 2016. The City generates a variety of hazardous wastes, including: solvents (Acetone, Xylene, Methanol, MEK, and Gasoline); toxic liquids such as pesticides; corrosive liquids; ammonia solutions, corrosive solids, flammable lab packs, and flammable aerosols. The City also generates significant quantities of waste latex paint and used oil, which are regulated but non-hazardous wastes.

LAND USE & TRANSPORTATION

NATURAL AREA PRESERVATION

The City of Hallandale Beach does not have extensive areas of undeveloped land or natural areas. However, the City does have extensive marine ecosystems, including lakes, estuarine areas, and the Intracoastal Waterway.

The Coastal Management and Conservation elements of the City's Comprehensive Plan establish objectives, goals and policies designed to protect natural resources. Notable objectives include: preserving the hazard mitigation system of dunes with native coastal vegetation, reducing stormwater pollutants, protecting manatees, and encouraging drought resistant/native vegetation through landscaping guidelines.

Hallandale Beach has been a certified Tree City USA, through the Arbor Day Foundation, for 26 years. Tree canopy is limited due to the intensive development in most of the City. The tree canopy should be increased to meet the 30% citywide coverage by 2030 goal set by the Broward League of Cities and adopted by Hallandale Beach. The current tree canopy percentage is not known, but the 2008 Citywide Masterplan and Implementation Strategy indicated it was very low. The City has a Street Tree Planting program, which should receive additional funding, and a Tree Preservation Ordinance.

Hallandale Beach is registered as a Community Wildlife Habitat by the National Wildlife Federation. This program requires cities to establish wildlife habitats at homes, schools and common areas; establish sustainable gardening practices; and educate citizens.

Due to the intensive development of the area, there are no threatened or endangered species habitats in Hallandale Beach; however manatees, bald eagles, and/or loggerhead turtles could potentially utilize marine/coastal environments in the City. The City's municipal code includes provisions to protect nesting sea turtles from artificial light sources on new coastal construction. The City was home to 31 turtle nests during the 2017 season.

OPEN SPACES, PARKS AND RECREATION

Hallandale Beach has about 108 acres of public parks and open space, and about 143 acres of public waterways. Broward County's Land Use Plan requires a level of service (LOS) standard of 3 acres of parks/open space per 1,000 residents. Including public waterways, Hallandale Beach's parks and open space exceed this standard by 144%. The City's CP acknowledges that parks and open space are not uniformly distributed, limiting some citizens access. In addition, public waterways are not generally accessible. As a result, the City continues to look for opportunities to both enhance existing facilities and add to its inventory. A proposal to increase the City's LOS to 4 acres/1000 residents and reduce the acreage of waterways that contribute towards this goal is currently before the City Commission. The goal is to develop an impact fee that will help the City purchase land for open space.

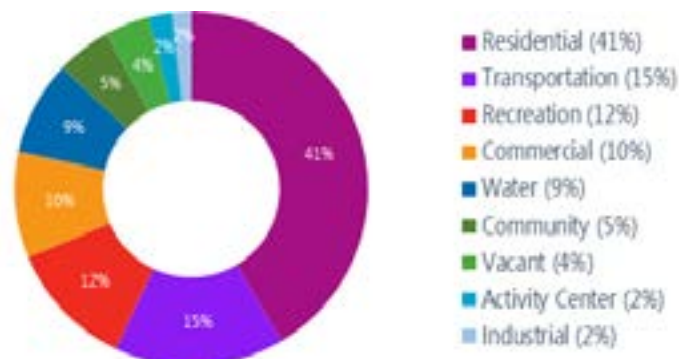
The City manages open spaces, parks and recreation according to its City Wide Parks Master Plan, which identified recreational needs, maximized use of current assets, and improved access to facilities. The plan guides investment of a \$58.5 million general obligation bond approved by the voters to improve existing parks and develop new facilities. The Administration has committed to having all of the parks under construction or completed by the end of FY19/20.

The largest investment is the Peter Bluesten Park. The park is designed to be the City's premiere civic space, integrating a government center, the Villages at Gulfstream Park, and a future multimodal transportation station into a new town center. The center will promote pedestrian-oriented, mixed-use, sustainable development. Plans to incorporate the Post Office are in development.

DEVELOPMENT AND REDEVELOPMENT

The City of Hallandale Beach is compact and largely built-out with minimal existing land use vacant. The predominant land use is residential, with significant portions devoted to transportation, recreation, commercial and water (Figure 6).

FIGURE 6: CITY OF HALLANDALE BEACH LAND USE DISTRIBUTION



The City's high-density nature lends itself to sustainability. In dense urban environments, economies of scale allow fewer resources to be used per capita, while multi-family housing, public transportation and other mobility options save energy and fuel. However, according to the City's 2009 Citywide Master Plan pedestrian spaces do not receive equal importance to vehicular space; the city lacks a distinct center, as do its neighborhoods; land uses are separated; development does not engage the street; demand for recreational space exceeds supply and water access to lakes and canals is limited.

Accordingly, the goals and recommendations of the Master Plan emphasize directing redevelopment of the City towards a pedestrian-oriented, mixed-use and sustainable form. Specific recommendations include establishing a town center around the redesigned Bluesten Park (see Open Spaces, Parks and Recreation), creating a system of pedestrian networks and multimodal roadways, improving waterfront access and revising policies and regulations to reinforce these stated City goals. It is important to note that both the Village of Gulfstream Park and the Mardi Gras Casino are undergoing a master plan development process and a change in ownership, respectively. This opens a very important window to readdress the SAP's goals as the transitions unfold.

The goals and recommendations of the Master Plan are largely consistent with the goals, objectives and policies of the City's CP dated 2007, but amended regularly. The CP emphasizes mixed-use development supportive of multimodal transportation throughout its future land use, transportation, housing and conservation elements. It has established a Local Activity Center coincident with the Village at Gulfstream Park and a Regional Activity Center between Dixie and Federal Highways, extending one block north east of Federal Highway and Hallandale Beach Boulevard in which land use is explicitly directed towards these goals. In these areas, the City's zoning has entitled significant increases in density.

The role of a revitalized and energized Community Redevelopment Agency (CRA) should not be ignored in reaching the SAP goals. The CRA will soon embark on creating a plan to determine outcomes through the completion of a 30-year life cycle. The goals of the SAP should be embedded in that vision.

LAND USE REGULATION

The City implements its vision for redevelopment and existing land uses, including its zoning and land development codes, through its CP and its code of ordinances.

While sustainability goals, objectives and policies occur throughout the CP, most of these are collected in the Conservation Element. These include water conservation, protection of natural areas, in particular beach dunes and vegetation; and restoration of native coastal vegetation.

The City's Development Service Department implements land use regulation. In the City's 2017-2019 Strategic Plan, the Department has committed to developing a new element of the CP dedicated to preparing for climate change. This follows on recently proposed amendments to the Coastal Management Element, including goals to reduce the City's Community Rating System (CRS) score (see Community Rating System (FEMA)); identify vulnerabilities to sea level rise; develop adaptation strategies in collaboration with the County and the Southeast Florida Regional Climate Change Compact; and establish Adaptation Action Areas (AAAs) within the City. AAAs designate areas susceptible to flooding and thus are vulnerable to the related effects of sea level rise for the purpose of prioritizing funding for planning and infrastructure.

The Future Land Use Element of the Comprehensive Plan includes both the Local Activity Center Land Use Category and the Regional Activity Center Land Use Category. Within these categories, compact, mixed-use development supplemented by recreation and open space is specifically encouraged. These concepts are reinforced by Land Development Regulations which focus on transforming Hallandale Beach into a walkable community through the implementation of zoning codes which dictate minimum densities, scalable buildings, build-to lines, connecting grid pattern streets, and other features focused more on the form of the built environment and less on segregating uses from one another. This portion of the City's Zoning Regulations – known as the Form-Based Code – applies along Federal Highway and a small portion of Hallandale Beach Boulevard. Expansion of the Form-Based Code to additional areas of the Hallandale Beach Boulevard corridor is under consideration.

Form Based Codes are a zoning innovation that regulates the physical form rather than the use of development. By controlling the relationship between buildings and streets, regulating the size and form of buildings as well as the scale of streets and blocks, Form Based Codes have the potential to more directly foster sustainable urban environments.

GREEN BUILDING CODE

“Green Building” refers to an integrated process of infrastructure planning, design, construction and operations that is economical, socially and environmentally responsible throughout the life cycle of the building.

The City has adopted standards for new construction/major renovation of residential buildings and certain commercial buildings. It has not adopted standards for civil infrastructure, landscapes or existing buildings. This is an opportunity that requires further consideration.

All new City buildings must receive green building certification from a recognized third-party. These include rating systems administered by the U.S. Green Building Council (LEED), the Green Buildings Initiative (Green Globes) and the Florida Green Building Coalition.

The City's Land Development Code requires all commercial new construction or major renovations greater than 50,000 gross square feet, all residential/hotel new construction or major renovation greater than 50 housing/hotel rooms; any projects requiring flexibility or reserve units; and any project requesting financial assistance from the City's Community Redevelopment Agency receive green building certification. All green building projects should receive expedited permitting review and approval although given high demand this goal is very difficult to achieve. The City has also committed to at least one training workshop per year related to green building.

In the 2017-2019 Strategic Plan, the City's Office of Capital Improvements commits to ensuring that all eligible capital improvement projects achieve a minimum LEED Silver. Currently there are at least four buildings in the City that have achieved green building certification, two of which are City facilities (Foster Park and BF James Park).

Several developments are in progress that are expected to comply with the City's Green Building Program, including three new City facilities (OB Johnson Park, Main Fire Station 7 and Bluesten Park).

TRANSPORTATION PATTERNS

Transportation in Hallandale Beach – like most places – is dominated by automobiles. County-wide, the share of travelers using automobiles is 98.9%, according to the Comprehensive plan. Traffic congestion on City roads is the greatest concern for citizens. Travel on the City's main thoroughfares, Hallandale Beach Boulevard, Pembroke Road and US-1/Federal Highway is highly-congested. The City is investigating roadway improvements that will provide for the use of traffic signal prioritization to enhance flow along congested thoroughfares. The City is also preparing a Mobility Plan which will address traffic and related issues, including a funding source to address the problem. Tri-rail operates a rail system with a station in nearby Hollywood. However, the CP acknowledges that it is not readily accessible to citizens. A commuter rail station has been proposed near Bluesten Park at the Florida East Coast Railway (FEC) tracks, with a bus service link to nearby Tri-Rail stations. This would provide an important opportunity to catalyze use of transit as well as economic development in the City.

In Hallandale Beach, about four percent of travelers use mass transit – higher than the County average of little more than one percent. Buses account for the majority of use. The City is served by both Broward County and Miami-Dade bus systems, providing access to the wider region. The City also provides a free Community Bus that provides transportation along four routes within the City, centered informally on the government center. It also provides connections to regional transit.

The CP notes that bicycling is common throughout the City. According to the MMP the City has a functional but incomplete grid of bicycle infrastructure. Walking is also common within the City. A city-wide network of sidewalks is desirable, particularly within neighborhoods. There are gaps in connectivity between neighborhoods, transit and commercial development along major corridors.

The transportation element of the comprehensive plan acknowledges a tension between the City's efforts to increase density and mixed-uses along key corridors and traffic congestion. To create a balance, the Mobility Plan will recommend measures to reduce congestion through roadway improvements and developing alternatives to automobiles.

Through the transportation element of the CP, the City has adopted vehicle miles traveled (VMT) reduction targets (CP, Transportation Element 1.3.11) and is working with the County to promote ridesharing, telecommuting and transit to meet the goals. The element also commits the City long term to the community bus system as well as funding bicycle and pedestrian improvements. This is reflected in the strategic plan, which includes goals to: increase Community Bus ridership; ensure that all City facilities are well connected and provisioned for pedestrians; and provide safe infrastructure and environments for pedestrians.

The City's mobility plan will include many recommendations and projects for enhancing mobility in Hallandale Beach. Many projects and funding sources will be identified, including: Level of Service (LOS) standards for bicycling and pedestrian infrastructure; new or improved bicycle/pedestrian paths; enhancements to the Community Bus System; and development of the Tri-Rail Coastal Link station. There will also be recommendations relating to resiliency of the City's road system related to sea level rise and more severe storms due to climate change.

NATURAL RESOURCE & RESILIENCY WATER USE

Two wells located in the northwest of the City supply Hallandale Beach with water. The wells are permitted by SFWMD with an expiration date of December 16, 2033 (Permit #06-00138-W). The permit authorizes withdrawals serving a portion of the demand for 41,911 persons through the year 2033 with an average per capita use rate of 179 gallons per day and an annual allocation of 1,277 million gallons. The City's South Florida Water Management District permit allows it to draw 3.5 MGD from existing wells.

This allocation is supplemented by water from Broward County wells to bring the total allocation to ~5.5 MGD. Demand in Hallandale Beach is projected to reach 5.60 MGD by 2035. The City's current permit is valid until 2033 and it is not clear at this time if the City's allocation will be increased to meet demand in the future. Therefore, it is imperative that the City implement water conservation, reduction and reuse programs to prepare for this future uncertainty.

The City is also supplied with well water from Broward County's South Regional Well Field located in southwestern Broward County. Currently, the City's water supply is drawn from the Biscayne Aquifer. In emergencies, an interconnect with the City of North Miami Beach allows Hallandale Beach to purchase water through interconnected water mains. This water is very expensive. However, an emergency backup is critical to have available.

Saltwater intrusion related to sea level rise is affecting the aquifer over 2.5 miles inland from the coast, adjacent to the two city wells⁹. In the future, the City may need to draw water from the Floridan Aquifer, or from the proposed C-51 Reservoir project in Palm Beach County.

COMMUNITY RATING SYSTEM (FEMA)

The Community Rating System (CRS) is a voluntary program for National Flood Insurance Program (NFIP) participating communities. CRS provides insurance rate incentives to: reduce flood damages to insurable property; strengthen and support the insurance aspects of the NFIP; and encourage a comprehensive approach to floodplain management.

There are 10 classes in the CRS, with lower numbers corresponding to higher discounts. For CRS participating communities, flood insurance premium rates are discounted in increments of five percent (i.e., a Class 1 community would receive a 45% premium discount, while a Class 9 community would receive a five percent discount (a Class 10 is not participating in the CRS and receives no discount)). The CRS classes for local communities are based on 18 creditable activities, organized under four categories:

- Public Information
- Mapping and Regulations
- Flood Damage Reduction
- Flood Preparedness

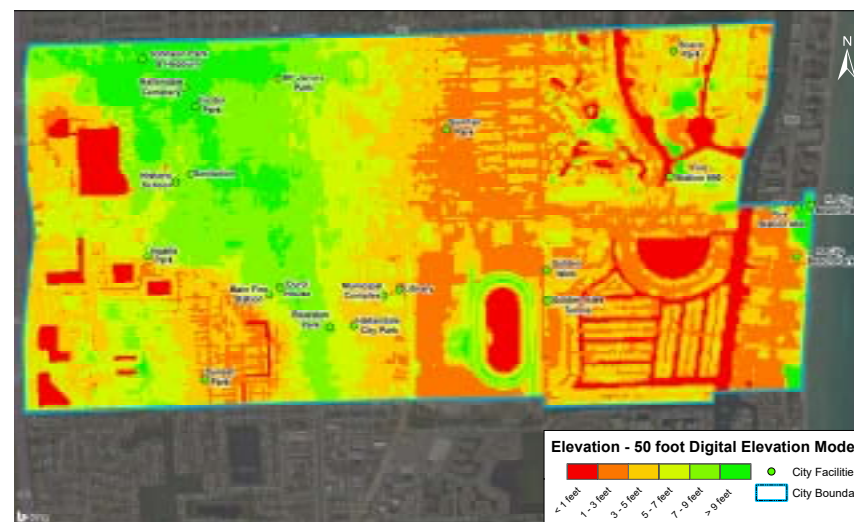
The City of Hallandale Beach was the first community in Broward County to secure a Class 6 CRS rating, which provides 20% reduction in rates for properties located within the flood zones and 10% reduction for properties outside the flood zone. Annual savings to residents and businesses were \$1,078,863 in 2014. If the City were able to improve its rating to Class 5, residents and businesses would benefit from a 25% reduction in insurance premiums. (From 2014 –June 4, 2014 City Commission Meeting Minutes). In 2016, the City passed an Ordinance establishing special elevation requirements for construction within flood hazard areas. As of April 2017, Hallandale Beach retained its Class 6 Rating, while Broward County as a whole had a Class 7 Rating. Achieving the Class 5 rating is a major goal of the SAP.

In 2014, Hallandale Beach Businesses and Residents had 17,646 Policies under the National Flood Insurance Program (NFIP), totaling over \$3 billion in coverage. From 1978 to 2014, there were 1,290 claims paid in the City, totaling over \$24 million. Total claims paid since 1978 were the second-highest by population among cities in Broward County, at approximately \$634/capita. This is due to our high population density.

HISTORICALLY VULNERABLE AREAS (FLOODING AND SHORELINE EROSION)

Hallandale Beach's proximity to the Atlantic Ocean and the Intracoastal Waterway comes with a risk of flooding from sea level rise and storm surge. The mean elevation in the City is 5.11 feet above mean sea level (MSL). Approximately 30% of the City is below three feet in elevation, and about 59% is below 5 feet. The highest areas of the City are predominantly in the northwest quadrant, west of Northeast 1st Avenue and north of SW 3rd Street. With the exception of a few areas of higher ground near Fire Station 60, Three Islands, and the Diplomat Country Club, most of the City east of Highway 1 is low-lying. Figure 7 shows a digital elevation model of Hallandale Beach at 50 foot resolution.

FIGURE 7: CITY OF HALLANDALE BEACH ELEVATION ABOVE SEA LEVEL



The City's CP, Land Use Element, Objective 2.2 states "The City shall direct populations away from High-Hazard Areas (HHAs) in concert with the established hazard mitigation strategies developed by Broward County. These areas correspond to Zone VE on FEMA's Federal Flood Insurance Rate Map (FIRM). Zone VE is defined as an area inundated by flood with a one percent annual chance of occurring and with a velocity hazard due to wave action. In Hallandale Beach, Zone VE areas are located along the coast east of S. Ocean Drive/ A1A. The City requires minimum elevations for the first floor of new construction sites to exceed the 100-year still-water and wave-action base flood elevations shown in the FIRM for the City.

The City's Comprehensive Emergency Operations Plan (CEOP) governs the City's response to a hurricane or other disaster. The CEOP, which has recently undergone a major update, indicates areas east of the Intracoastal Waterway are vulnerable to storm surges during all hurricanes and should be evacuated and areas east of Federal Highway should be evacuated in Category 3 or higher storms.

STORM SURGE AND EVACUATION PROBABILITY OF A MAJOR STORM

The City of Hallandale Beach is a coastal city in a region that is vulnerable to tropical storms and hurricanes. Broward County experienced 22 hurricane strikes from 1900 – 2010, 12 of which were major hurricanes. NOAA estimates there is a four percent probability of a Class 3 or greater hurricane strike in the region in any given year. Storm frequency and severity are projected to increase as a result of global climate change, potentially increasing the probability that Hallandale Beach will experience a major storm in the future. While gusts achieved hurricane strength, Hurricane Irma in 2017 sustained winds less than 74 mph winds in Broward County, technically a very strong tropical storm – not a hurricane.

EVACUATION

Sections of Ocean Drive (A1A), a designated evacuation route, could be underwater under a two foot sea level rise (SLR) scenario. This could potentially impact efforts to evacuate parts of Hallandale Beach ahead of a hurricane or other natural disaster. This means our system of notifying residents needs to be improved, including the use of additional languages such as Spanish and Russian. The City implemented this during Hurricane Irma with great success.

STORM SURGE

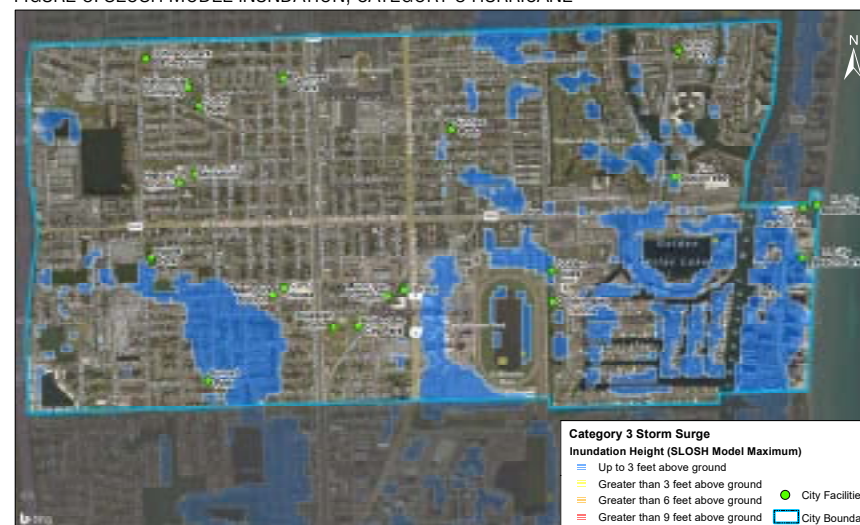
Storm surge is an abnormal rise of water generated by a storm, over and above the predicted astronomical tides. In coastal areas, storm surge is often the greatest threat to life and property from a hurricane. Storm surges can reach heights of 30 or more feet and extend many miles inland from the coast. Storm surges travel further inland in areas with low elevation and a shallow continental shelf, such as the southeast coast of Florida.

The Sea, Lake, and Overland Surges from Hurricanes (SLOSH) Model, which was developed by the Federal Emergency Management Agency (FEMA), United States Army Corps of Engineers (USACE), and the National Weather Service (NWS), predicts storm surge impacts to communities. The model estimates storm surge depths resulting from hypothetical hurricanes. SLOSH is based on probabilistic approaches and multiple model runs of hypothetical hurricanes with different storm conditions. It is not a worst case scenario, as there is about a 1 in 10 chance that storm surge flooding at any particular location could be higher than the values shown. SLOSH is able to resolve flow through barriers, gaps, and passes and models deep passes between bodies of water. It also resolves inland inundation and the over topping of barrier systems, levees, and roads¹⁰.

NOAA SLOSH maps indicate Hallandale Beach could experience flooding from a Category 1 or 2 storm. In September 2017, the City experienced a storm surge of one to two feet from Hurricane Irma, then a Category 1 storm. Surge depths were similar to those predicted by the SLOSH model.

A Category 3 or above storm could cause extensive flooding up to three feet above ground level in Hallandale Beach, affecting areas near S. Ocean Drive, Golden Isles, Gulfstream Park, and north of Sunset Park. A Category 4 or 5 storm could flood more than 50% of the City's area, with flood depths of six feet or greater in some areas. In the future, SLR may increase the effects of storm surge. Figure 8 shows predicted SLOSH Model inundation from a Category 3 hurricane impacting Hallandale Beach, based on current sea levels.

FIGURE 8: SLOSH MODEL INUNDATION, CATEGORY 3 HURRICANE



STORM EVENT AND SEA LEVEL RISE PROJECTIONS

The Southeast Florida Regional Climate Change Compact's Unified Southeast Florida Sea Level Rise Projection projects SLR between 6-10 inches by 2030 and between 14-26 inches by 2060, based on a 2010 baseline.

Parts of Hallandale Beach are included in Broward County's Priority Planning Areas for sea level rise, adopted in December 2015. These are areas near tidal water bodies at increased risk of inundation under a two foot sea level rise scenario, projected to occur as soon as 2060.

INFRASTRUCTURE AND NATURAL RESOURCE RESILIENCY STATUS

INFRASTRUCTURE

The 2013 City of Hallandale Beach Vulnerability to Sea Level Rise Assessment Report identified major municipal infrastructure at risk of inundation under one and two foot SLR scenarios.

Under one foot of SLR scenario, the report found minor impacts to vulnerable infrastructure including to arterial roads around the Municipal Center / Police Station and limited flooding of approximately 5 acres or less throughout the City.

Under a 2 foot SLR scenario, the report found up to 72 acres could be inundated throughout the city. Inundated streets could limit access to City Hall and the Police department. Two City parks, and Fire Station #60 (located at 2801 East Hallandale Beach Boulevard) would also have limited access and/or flooding under this scenario.

The Hallandale Beach Community Redevelopment Area (CRA) includes areas with elevations at or below sea level during both the one and two foot scenarios. In addition, bridge clearance would be affected under both scenarios.

It is important to realize these findings are based on SLR alone and do not factor in flooding which could occur from the additive effect of SLR and storm surge during extreme weather events.

The City does not currently track renovation of public facilities to improve resiliency. In future, the City plans will take the Unified Sea Level Rise Projection into account when upgrading sewage pump stations.

NATURAL RESOURCES

The City of Hallandale Beach does not have any regional parks or nature centers, and predominately consists of developed land. The City does not have any extensive natural areas or features that could mitigate the effects of SLR or storm surge (i.e. mangroves, marshes, coastal barrier islands, etc.). This possibility exists for the Chaves Lake park development program. The park design will begin in 2018, subject to the results of the Phase I and II pollution reports currently underway.

According to the “Resilience Dialogues Final Synthesis Report” prepared for Hallandale Beach by the Institute for Sustainable Communities, Saltwater intrusion is already affecting the aquifer over 2.5 miles inland from the coast, adjacent to two city wells. Saltwater intrusion can have deleterious effects, including contamination of private fresh water wells, elevation of the water table leading to septic system failure, structural damage to building foundations, and negative effects on landscaping/vegetation.

Sea level rise may cause the water table to rise, reducing soil storage capacity in some areas. Broward County’s Future Conditions Average Wet Season Groundwater Elevation

Map models sea level rise and precipitation impacts related to climate change to project wet season groundwater elevations during the years of 2060-2069. Projected contours in Hallandale Beach show between 1.5 and 0.0 feet North American Vertical Datum (NAVD), the vertical control datum of orthometric height established for vertical control surveying, indicating groundwater will be just below the land surface in many locations. The change in groundwater depth has the potential to exacerbate the flooding impacts of extreme precipitation, which are expected to become more frequent as a result of climate change.

EDUCATION & OUTREACH

COMMUNITY OUTREACH AND GREEN MARKETING

The City of Hallandale Beach is actively engaged in both outreach towards residents and internal engagement of staff regarding its Green Initiatives and resilience initiatives. The Green Initiatives Program (cohb.org/green) is featured on the City’s website, with pages on understanding climate change, recycling, water conservation, and best management practices (BMPs) for pesticide, herbicide, and fertilizer use. In addition, the City promotes its Green Initiatives through newsletters, signage, programs workshops, and festivals. A Sustainability Tools for Assessing and Rating Communities (STAR) feasibility assessment has been prepared as part of the Sustainability Action Planning process. Achieving STAR Certification will result in valuable recognition and publicity as well as demonstrable positive financial outcomes for the City’s Green Initiatives Program. Table 2 shows some of the City’s existing external outreach efforts.



TABLE 2: GREEN INITIATIVES OUTREACH EXAMPLES (EXTERNAL)

Outreach Effort	Description
Green Initiatives Newsletter	Hallandale Beach's quarterly Green Initiatives Newsletter educates residents about the City's sustainability efforts and highlights programs, workshops, initiatives and incentives.
Hallandale Happenings	The official Hallandale Beach newsletter, typically features one article related to the City's Green Initiatives and programs each quarter.
Sea Level Rise Awareness Poles	Six sea level rise (SLR) awareness poles are installed at beach access locations. The poles visually show what the impacts of SLR will be in the community and contain information about climate change, SLR impacts and ideas to reduce GHG emissions.
Water Conservation Program	Offered in partnership with Broward County, the Program features rebates to incentivize residents to replace toilets for more efficient models, and also provides free low-flow fixtures to residents. The Program is promoted on the City's website and through community workshops.
Water Conservation Month	The City designated April 2017 "Water Conservation Month" to raise awareness about the importance of water conservation.
Energy Conservation Program	The Program provides free high-efficiency LED light bulbs and smart power strips to residents to lower energy consumption.
Youth Beach Clean Up Program	The Program hires area youth to clean up the beach and educates them about marine debris hazards and pollution. Program includes a baseline knowledge assessment and follow-up survey. Youth team members also provide education and outreach to beach goers.
WaterWise	The Water Wise Educational Program promotes water conservation in schools, with an estimated ~75,000,000 gallons saved from 2008 to 2014. The program includes classroom instruction, problem-solving activities, and a take-home kit with high efficiency water saving devices the students can install at home.
Green Fest	The Annual Green Fest features workshops, vendors, giveaways, games, document shredding, and the Trashion Show (a fashion show to raise awareness about waste/recycling).
Zero Waste Workshop	The Workshop educated residents about the principles of Zero Waste, the hazards of marine debris, the City's recycling Program, and home/health do-it-yourself products to help residents save money, improve health and reduce their impact.
Rain Barrel and FL Friendly Plants Workshop	The Workshop provided information about water conservation, Florida native and drought-tolerant plants, and the construction and use of rain barrels to attendees.
We-Lab Workshop	The Workshop implemented water & energy saving behaviors to save money and foster sustainability.

The City's education and outreach efforts are coordinated by the Green Initiatives Coordinator. Although the City provided many examples of communications and outreach efforts in a variety of media, a formal Communications Plan identifying audience, media, messaging, goals and strategies should be developed. The City tracks social media engagement for its accounts on Facebook, Twitter and Instagram. To date, Hallandale Beach has no comprehensive strategy for public outreach related to sustainability, and has not marketed the City as a green tourism destination or green business community.

INTERNAL ENGAGEMENT

The City set a FY16/17 goal of presenting a Green Initiatives Program Overview during all new full-time employee orientations. The program would provide an overview of sustainability and climate change, and familiarize new employees with the City's green initiatives, including the recycling program, water conservation program, home energy efficiency program, and public events/workshops. This program has not yet been rolled out due to delays and necessary coordination with Human Resources. With the adoption of the SAP, the rollout will be completed during FY18/19.

In 2016, the Green Initiatives Coordinator and Fire Department staff conducted a recycling audit to identify recyclable materials in their waste stream. Six audits were performed in total – three prior to staff training sessions and three after. 41 staff members attended training and the re-audit showed a 44% increase in the Fire Department's recycling rate. Recyclable commodities found included: office paper; handouts/pamphlets/flyers; magazines; cardboard boxes; plastic bottles; post-it notes and aluminum cans. As part of the audit process, the Fire Department developed a Recycling Program Policy to guide its employees in waste minimization and recycling.

FUNDING & EVALUATION

FUNDING

Funding for sustainability initiatives in Hallandale Beach currently derives from a variety of sources. These sources can also fund future sustainability initiatives for the City.

The City's park and open space improvements are funded by a \$58.5 general obligation bond.

Broward County's Transportation Management Concurrency System (TCMA) collects impact fees from development that affects roads within the City under its jurisdiction. These funds are invested in transit improvements within a district that includes Hallandale Beach. Similar to the TCMA, the City requires mitigation for development affecting local roads. Fees can be collected via Developer Agreements that demonstrate a nexus between the fee and the mitigation.

The City's General Fund was nearly \$62 million in 2016 and consists of Ad Valorem property taxes, fees for service, permitting fees, utility taxes and franchise taxes. Fees collected by the City are various, ranging from plan review fees to day camp fees. General funds can be directed towards sustainability projects and personnel, such as the City's Green Initiatives Coordinator. Fees could potentially be crafted to incentivize sustainability outcomes and generate revenues for sustainability projects.

Other potential City sources of funding for sustainability projects include the Transportation Fund, which includes proceeds from the local option gas tax (about \$1 million in 2016) and the Utility fund (\$22 million in 2016), which includes revenues from the City's water utility. The City's water utility actively promotes water conservation activities among customers as well as reuse of non-potable water for uses such as irrigation.

Grants and rebates are another source of funding for sustainability projects. Grants may be available at all levels of government (Federal, State, and Local). Examples include a State of Florida Department of Economic Opportunity grant that is funding Form Based Code

development in the City. Rebates were recently available from the State of Florida for the purchase of natural gas vehicles, such as the City's CNG refuse trucks.

Public-Private Partnerships provide private capital for sustainability projects. An example is the City's Energy Savings Performance Contract, which invested about \$5.5 million in energy and water improvements in the City's facilities.

EVALUATION

The City utilizes a Strategic Plan to establish a shared mission and vision for the City. It sets priorities that are supported by specific initiatives. These initiatives, in turn, include performance measures to monitor and evaluate improvement. Staff is held accountable for achieving strategic commitments. The strategic plan includes priority areas related to sustainability that include metrics. These initiatives are detailed in the preceding sections.

The City's Sustainable Initiatives Coordinator monitors City operations and identifies opportunities to promote sustainability throughout the City. This includes working closely with staff to obtain and evaluate relevant data. As evidence of this, the comprehensive information necessary for this Sustainability Planning effort was collected quickly and thoroughly. However, the City does not yet systematically track and evaluate key sustainability performance indicators related to its focus areas. Additionally, the City lacks a comprehensive, centralized database to track sustainability performance. This need will be met with the adoption of the SAP.



BENCHMARKING

No two cities are alike. As unique as its citizens, a city is the unpredictable result of its own history, demographics, geography, culture, and politics, among many other factors. Because of these differences, it can be difficult to compare sustainability progress between local governments without a suitable evaluation framework.

The STAR Community Rating System (STAR) is the nation's first voluntary, self-reporting framework for evaluating, quantifying, and improving the livability and sustainability of U.S. communities. It facilitates meaningful comparisons of cities' sustainability performance. The framework addresses social, economic and environmental dimensions of the community. It is premised on a framework of sustainability goals, objectives and evaluation measures. Local leaders can set goals and measure progress across sustainability themes using the evaluation measures included in the Rating System. Within the Goals and Objectives, specific Best Management Practices, or "actions" are included such as regulatory changes, land acquisitions, policy innovation, or specific actions such as increasing access to transit.

STAR rates communities on a 5-point scale and awards leadership certifications for three, four and five star ratings. Each rating is good for four years before recertification is required. Most communities first achieve a 3-STAR rating and then work to improve their score over time. Certified STAR communities are part of a select group. Currently, there are close to 30 3-STAR communities nationwide, and five in Florida, including Monroe County, the City of St Petersburg, and the Village of Pinecrest. Broward County and West Palm Beach are currently the only 4-STAR communities in Florida, and there are only four 5-STAR communities nationwide.

There are many benefits to STAR certification. STAR certification typically attracts media attention and helps communities communicate the value of their sustainability programs to the public and other stakeholders. It also allows them to compare their progress against other STAR communities. Through the certification process, communities gather data about

environmental, social and economic initiatives, establish goals, and demonstrate the ability to transparently track their progress. They also have the opportunity to learn from and adopt best management practices inherent in the STAR framework. STAR allows each community to find a route to the desired certification level that meet its own needs and priorities.

BENCHMARKING PROCESS

In collaboration with Hallandale Beach's Green Initiatives Coordinator, the City's consultant used STAR as a tool to benchmark the City's sustainability performance relative to three peer local governments. This approach yielded multiple benefits. It provided an objective reference point for meaningful comparisons, revealed BMPs successfully implemented by peers, introduced City staff to STAR, and set the stage for the City's eventual STAR certification by establishing a preliminary STAR rating point score.

Three peer local governments were selected. In Florida, Broward County and the Village of Pinecrest are geographically close to Hallandale Beach, sharing a similar climate, coastal environment, urban character, and regulatory landscape. The third city, Park Forest, Illinois, is similar in population and demographics to Hallandale Beach. All three peers have previously achieved STAR certification.

RS&H evaluated STAR objectives related to the City's SAP focus areas for the benchmarking effort. Table 3 shows the STAR objectives RS&H evaluated (highlighted), while the remaining objectives were evaluated by the City's Green Initiatives Coordinator. As each objective was evaluated, it was entered into the STAR Crosswalk Assessment Tool to determine a preliminary STAR point score. The objectives evaluated were also compared (benchmarked) against the three peer local governments to assess the City's sustainability progress and identify BMPs applicable to Hallandale Beach.



TABLE 3: STAR OBJECTIVES INCLUDED IN BENCHMARKING ANALYSIS*

Focus area and Objectives	
Built Environment	Equity & Empowerment
BE-1: Ambient Noise & Light	EE-1: Civic Engagement
BE-2: Community Water Systems	EE-2: Civil & Human Rights
BE-3: Compact & Complete Communities	EE-3: Environmental Justice
BE-4: Housing Affordability	EE-4: Equitable Services & Access
BE-5: Infill & Redevelopment	EE-5: Human Services
BE-6: Public Park Land	EE-6: Poverty Prevention & Alleviation
BE-7: Transportation Choices	Health & Safety
Climate & Energy	HS-1: Active Living
CE-1: Climate Adaptation	HS-2: Community Health
CE-2: Greenhouse Gas Mitigation	HS-3: Emergency Management & Response
CE-3: Greening the Energy Supply	HS-4: Food Access & Nutrition
CE-4: Energy Efficiency	HS-5: Health Systems
CE-5: Water Efficiency	HS-6: Hazard Mitigation
CE-6: Local Gov. GHG & Resource Efficiency	HS-7: Safe Communities
CE-7: Waste Minimization	Natural Systems
Economy & Jobs	NS-1: Green Infrastructure
EJ-1: Business Retention & Development	NS-2: Biodiversity & Invasive Species
EJ-2: Green Market Development	NS-3: Natural Resource Protection
EJ-3: Local Economy	NS-4: Outdoor Air Quality
EJ-4: Quality Jobs & Living Wages	NS-5: Water in the Environment
EJ-5: Targeted Industry Development	NS-6: Working Lands
EJ-6: Workforce Readiness	Innovation & Process
Education, Arts & Community	IP-1 Best Practices & Processes
EAC-1: Arts & Culture	IP-2: Exemplary Performance
EAC-2: Community Cohesion	IP-3: Local Innovation
EAC-3: Educational Opportunity & Attainment	IP-4: Good Governance
EAC-4: Historic Preservation	
EAC-5: Social & Cultural Diversity	
EAC-6: Aging in the Community	

* Highlights indicate STAR Objectives evaluated by RS&H, remaining objectives were evaluated by the City of Hallandale Beach. The informal STAR self-assessment included as a part of the SAP evaluated all 526 indicators included in the STAR program.

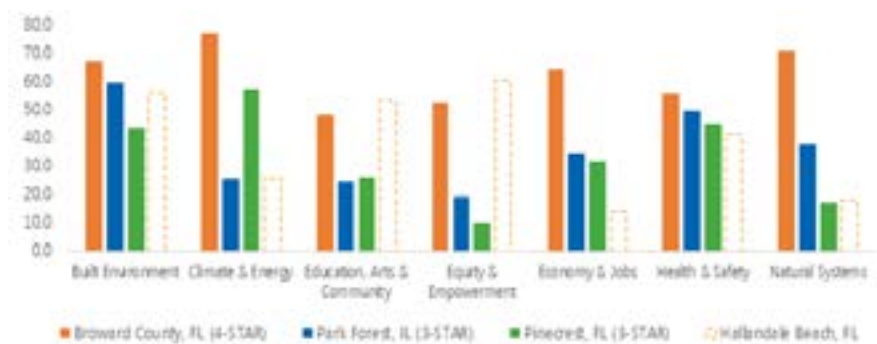
BENCHMARKING RESULTS

Benchmarking results show Hallandale Beach should be able to achieve a 3-STAR rating and demonstrate similar sustainability leadership to Pinecrest and Park Forest. Table 4 shows the City's projected STAR point score for each focus area. Figure 9 shows the City's projected STAR points compared to the actual STAR ratings achieved by the peers for each STAR goal area. Note that STAR point scores must be verified by a STAR reviewer. Scores are typically revised downwards 10-20 percent or more during this process. A minimum of 250 points are required to receive a 3-STAR rating.

TABLE 4: HALLANDALE BEACH PROJECTED STAR POINT SCORE

Goal Area	Score	% Complete
Built Environment	56	56%
Climate & Energy	26	26%
Education, Arts & Community	53	76%
Equity & Empowerment	60	60%
Economy & Jobs	14	14%
Health & Safety	41	41%
Natural Systems	18	18%
Total	269	37%

FIGURE 9: STAR POINT SCORE BY GOAL AREA



Analysis of the City's projected STAR point scores shows the relative strength of its performance in each STAR goal area. Figure 10 shows Hallandale Beach performs relatively well in Education, Arts & Community, Equity and Empowerment, and Built Environment. The City performs less well in the Climate & Energy, Economy & Jobs, Health & Safety, and Natural Systems goal areas.

FIGURE 10: HALLANDALE BEACH'S PROJECTED PERFORMANCE IN EACH STAR GOAL AREA



Two public workshops were held during the course of development of the SAP. The first was held November 4th, 2017 at the Hallandale Beach Cultural Center. The second was held on November 18th at Foster Park Community Center.

The purpose of the workshops was to update citizens on the City's ongoing green initiatives, inform them of the City's baseline sustainability performance (as documented in the Baseline and Benchmarking Appendices) and solicit input on the goals and projects of the SAP.

Over 20 citizens participated in the events, as did the City's Mayor, City Manager and Green Initiatives Coordinator. Citizens participated in an activity based on the City's performance relative to the STAR Community Rating System (as documented in the Benchmarking Appendix). They evaluated and prioritized 154 potential actions to enhance the City's standing relative to this tool. Their priorities are shown in Table 5. The table includes the STAR Communities Rating System objective, action, goal area and criterion most favored by workshop participants.

TABLE 5: HALLANDALE BEACH PROJECTED STAR POINT SCORE

Objective	Action	Goal Area	Criterion
Increase funding in green infrastructure	Green Infrastructure	Natural Systems	NS-1:A-7
Adopt a bicycle and pedestrian master plan	Transportation Choices	Built Environment	BE-7:A-1
Establish water quality regulations	Water in the Environment	Natural Systems	NS-5:A-2
Full-day kindergarten for low-income & special needs children	Educational Opportunity & Attainment	Education, Arts & Community	EAC-3:A-5
Multiple pathways to secondary school graduation	Educational Opportunity & Attainment	Education, Arts & Community	EAC-3:A-7
Adopt a poverty reduction plan	Poverty Prevention & Alleviation	Equity & Empowerment	EE-6:A-1
Achieve Bicycle- or Walk-Friendly designation	Active Living	Health & Safety	HS-1:A-6

Several of these priorities were directly incorporated into the SAP. These include the Bikeshare, Build-out Bicycle and Pedestrian Infrastructure and Low Impact Development projects.



On the following pages, a detailed management plan is provided for each projected included in the SAP. Included for each project is the following information:

- Identifying information, including project ID, name, SAP focus area and year of establishment.
- The responsibility for the project, including the Project Manager (identified by role) and lead Department.
- Estimated performance metrics, including Net Present Value, Return on Investment and Project Life.
- The SAP focus area goal that the project contributes towards fulfilling, as well as an estimate of how much of this goal the project helps achieve (“Project Contribution”)
- A description of the project, including its objective, measures – including key performance indicators – that will be used to evaluate progress, actions required to implement the project, estimated cost and benefits and expected funding sources.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY

RC1. LED STREETLIGHTS

PROJECT IDENTIFICATION:

Project ID: RC1
Project Name: LED Streetlights
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Operations Manager
Department: Public Works

PERFORMANCE:

Net Present Value: \$78,000
Return on Investment: 58%
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce electricity consumption for City Operations by 15% by 2022 relative to 2013 baseline
Project Contribution: 12% of Focus Area Goal

PROJECT DESCRIPTION:

- Objective**
 - Measure(s)**
 - Action**
 - Cost(s)/Benefit(s)**
 - Funding**
- a. Objective: Reduce energy consumption of city street lighting by replacing existing lamps and fixtures with light-emitting diode (LED)s.
- b. Measure(s): Replace 100% of approximately 386 streetlights owned by the City.
- c. Action(s): Specify replacement of existing luminaires with LEDs with similar aesthetics and performance and install them. The delivery method must be determined (e.g. design/bid/build; performance contract, etc.). The city could procure the upgrades through traditional delivery methods (e.g. design / bid / build) or design-build methods. For purposes of estimation, this project is currently modeled with an upfront capital expenditure (e.g. design / bid / build).
- d. Cost(s)/Benefit(s): For purposes of estimation, costs are assumed to be \$500 per fixture based on vendor quote. It is assumed that installation occurs in years 1-3. Benefits: Benefits include avoided electricity consumption associated with the current, less efficient fixtures and lamps. An average project savings of 40% is projected. Average savings are assumed to occur in years 1 - 10. Savings include avoided maintenance costs based on a weighted average resource rate (\$0.16/kWh) sourced from historical FPL billings that include electricity and maintenance costs. Benefits do not include commercial energy efficiency rebates that may be available from FPL. Values are projected to increase by 2.4% on average based on the CBO's Economic Projections for 2018 - 2027 for the Consumer Price Index.
- e. Funding: Funding is to be determined. The City will explore traditional and public-private partnership project delivery methods. The later would require no upfront investment on the part of the City.



CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY

RC2. LED INTERIOR LIGHTING

PROJECT IDENTIFICATION:

Project ID: RC2
Project Name: LED Interior Lighting
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Operations Manager
Department: Public Works

PERFORMANCE:

Net Present Value: \$24,000
Return on Investment: 41%
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce electricity consumption for City Operations by 15% by 2022 relative to 2013 baseline
Project Contribution: 11% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Reduce energy consumption of city facility interior lighting by replacing existing lamps with light-emitting diode (LEDs).
- b. Measure(s): Replace 100% of approximately 7,000 T8 fluorescent lamps with equivalent LEDs.
- c. Action(s): Specify replacement of existing luminaires with retrofit or replacement LEDs luminaires with similar aesthetics and performance and install them. It is expected that the city could specify, purchase and install retrofits with its own maintenance staff. Since lighting was upgraded in 2014 as part of a performance contract that stipulates that the City is responsible for maintenance of luminaires and fixtures, this project is scheduled to take place in 2021 and 2022, when the majority of the 2014 retrofit luminaires / fixtures will have failed. Alternatively, the City could begin retrofit / replacement as luminaires / fixtures fail now.
- d. Cost(s)/Benefit(s): For purposes of estimation, it is assumed that 25W T8 fluorescent lamps are installed in all City facilities at a density of 1.1 watts / sf. Given total office space of about 160,000 sf, costs are assumed to be about \$12 per lamp based on published prices for LED equivalent T8 lamps and a 15% markup for installation labor. Retrofit LEDs are currently rated at 17W. It is assumed that installation occurs in years 4-5. As noted above, retrofit / replacement could be accelerated to enhance the project's economic performance. Benefits: Benefits include avoided electricity consumption associated with the current, less efficient fixtures and lamps. An average project savings of 32% is projected. Average savings are assumed to occur in years 1 - 10. Savings do not include avoided maintenance costs, though these could be significant, since LED lamps may last 2-5 times longer than fluorescents. Benefits do not include commercial energy efficiency rebates that may be available from FPL. Values are projected to increase by 2.4% on average based on the CBO's Economic Projections for 2018 - 2027 for the Consumer Price Index.
- e. Funding: To be determined.



CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY

RC3. SOLAR THERMAL SYSTEMS

PROJECT IDENTIFICATION:

Project ID: RC3
Project Name: Solar Thermal Systems
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Operations Manager
Department: Public Works

PERFORMANCE:

Net Present Value: \$-21,000
Return on Investment: -63%
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce electricity consumption for City Operations by 15% by 2022 relative to 2013 baseline
Project Contribution: 1% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Reduce energy consumption of city facility interior lighting by replacing existing lamps with light-emitting diode (LEDs).
- b. Measure(s): Replace 100% of approximately 7,000 T8 fluorescent lamps with equivalent LEDs.
- c. Action(s): Specify replacement of existing luminaires with retrofit or replacement LEDs luminaires with similar aesthetics and performance and install them. It is expected that the city could specify, purchase and install retrofits with its own maintenance staff. Since lighting was upgraded in 2014 as part of a performance contract that stipulates that the City is responsible for maintenance of luminaires and fixtures, this project is scheduled to take place in 2021 and 2022, when the majority of the 2014 retrofit luminaires / fixtures will have failed. Alternatively, the City could begin retrofit / replacement as luminaires / fixtures fail now.
- d. Cost(s)/Benefit(s): For purposes of estimation, it is assumed that 25W T8 fluorescent lamps are installed in all City facilities at a density of 1.1 watts / sf. Given total office space of about 160,000 sf, costs are assumed to be about \$12 per lamp based on published prices for LED equivalent T8 lamps and a 15% markup for installation labor. Retrofit LEDs are currently rated at 17W. It is assumed that installation occurs in years 4-5. As noted above, retrofit / replacement could be accelerated to enhance the project's economic performance. Benefits: Benefits include avoided electricity consumption associated with the current, less efficient fixtures and lamps. An average project savings of 32% is projected. Average savings are assumed to occur in years 1 - 10. Savings do not include avoided maintenance costs, though these could be significant, since LED lamps may last 2-5 times longer than fluorescents. Benefits do not include commercial energy efficiency rebates that may be available from FPL. Values are projected to increase by 2.4% on average based on the CBO's Economic Projections for 2018 - 2027 for the Consumer Price Index.
- e. Funding: To be determined.



CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY

RC4. EXISTING CITY BUILDING COMMISSIONING

PROJECT IDENTIFICATION:

Project ID: RC4
Project Name: Existing City Building Commissioning
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Operations Manager
Department: Public Works

PERFORMANCE:

Net Present Value: \$124,000
Return on Investment: 96%
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce electricity consumption for City Operations by 15% by 2022 relative to 2013 baseline
Project Contribution: 11% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Perform Existing Building Commissioning of the City's largest and most complex facilities. Existing Building Commissioning (EBCx) is a systematic process for investigating, analyzing, and optimizing the performance of building systems through the identification and correction of deficiencies. The process verifies that the building and its systems meet current requirements, improves energy / water / thermal comfort performance, resolves operations / controls / maintenance problems, reduces or eliminates occupant comfort complaints, improves indoor environmental comfort / quality, and documents system operations. An investment grade energy audit conducted in 2014 and a facility walk-thru conducted in 2017 both indicated that the City's major facilities could benefit from EBCx.
- b. Measure(s): Achieve 15% electricity savings from existing building commissioning.
- c. Action(s): Procure professional services for existing building commissioning at the City Hall Complex (City Hall, Police, and Cultural Center), OB Johnson, Foster Park and the Public Works Administrative Building. Implement recommendations from existing building commissioning investigation phase. Re-commission key facilities on a regular cycle (e.g. 5 years).
- d. Cost(s): Professional commissioning services costs are estimated at \$0.50 per square foot. An additional investment of about \$30,000 is estimated to implement corrective actions identified by the process. Benefits assume average energy savings of 15%. A Lawrence Berkeley National Laboratory meta-study found typical simple investment payback in commissioning averages 1.8 years with a range of 0.5-3.5 years.
- e. Funding: To be determined.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



RC5. ELECTRIC VEHICLES & INFRASTRUCTURE

PROJECT IDENTIFICATION:

Project ID: RC5
Project Name: Electric Vehicles & Infrastructure
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Fleet Administrator
Department: Public Works

PERFORMANCE:

Net Present Value: \$90,000
Return on Investment: 258%
Project Life: 10 years

GOALS:

Focus Area Goal: Displace 10% of gasoline / diesel fuels with fuel efficiency or alternative fuels by 2022 relative to 2013 baseline
Project Contribution: 25% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Replace the most utilized passenger vehicles with electric vehicles (EV), accompanied by electric vehicle support equipment (EVSE), where operationally feasible.
- b. Measure(s): Replace 10 vehicles and provide EVSE by the end of 2019.
- c. Action(s): Develop an annual procurement and operations and maintenance plan to replace 10 vehicles by the end of 2019. Purchase of additional EVs after 2019 will be contingent upon cost-effectiveness relative to alternatives. Vehicles will be replaced with the Nissan Leaf or equivalent. Train technicians on EV maintenance, as necessary. The plan will also include selecting and procuring the most appropriate EVSE for charging the vehicles. Vehicles will be decommissioned from the fleet after 8 years and salvaged. The measure only incorporates the salvage value of vehicles purchased in Year 2, since the salvage value for vehicles purchased in year three will occur outside of the 10 year project lifetime.
- d. Cost(s): The incremental cost is conservatively assumed to be the difference in procurement cost for a Nissan Leaf and an average compact vehicle as defined by the current Florida DMS contract. Based on current terms, this value is approximately \$6,000. Incremental costs going forward will be monitored to account for changes in pricing and to determine whether further EV procurement is cost effective relative to fuel-efficient vehicles. The installed cost of EVSE is assumed to be \$4,000 per charge point per vendor quotes. Benefit(s): Costs are offset by an estimated \$2,500 salvage value after 8 years. The benefits do not include potential maintenance savings. Values are projected to increase by 2.4% on average based on the CBO's Economic Projections for 2017 - 2027 for the Consumer Price Index.
- e. Funding: To be determined.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



RC6. INCREASE FUEL ECONOMY

PROJECT IDENTIFICATION:

Project ID: RC6
Project Name: Increase Fuel Economy
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Fleet Administrator
Department: Public Works

PERFORMANCE:

Net Present Value: \$118,000
Return on Investment: ∞
Project Life: 10 years

GOALS:

Focus Area Goal: Displace 10% of gasoline / diesel fuels with fuel efficiency or alternative fuels by 2022 relative to 2013 baseline
Project Contribution: 25% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Improve the average fuel economy of the city's fleet by procuring high-efficiency vehicles to replace less efficient vehicles.
- b. Measure(s): Replace at least 16 light-duty vehicles (LDVs) with models that have an average annual fuel economy at least 50% greater.
- c. Actions: Identify fuel-inefficient vehicles scheduled for replacement and replace them with higher-efficiency models available via the current Florida DMS contract. In order to preserve the plan rate of fleet replacement, phase the in over three years. The strategy is premised upon a comparison between the incremental cost of replacing vehicles with fuel efficient or electric vehicles alternatives. These costs will be monitored and preference will be given to replacement with electric vehicles, where cost-effective.
- d. Cost(s)/Benefit(s): A negative price premium of about (\$1,300) for specified models is expected relative to the average cost of comparable compact vehicles available via the state contract. However, the cost is assumed to be \$0. A reduced cost per mile for replaced vehicles is expected. This reduced fuel cost per mile includes factors additional to avoided fuel expenditure (e.g. reduced maintenance, etc.). Avoided fuel use is based on an estimated fuel economy improvement of 50% for replacement vehicles. The fuel cost rate is projected to increase by 2.4% on average based on the CBO's Economic Projections for 2017 - 2027 for the Consumer Price Index. The project life is assumed to be 10 years. Vehicles are assumed to have a 10 year life. As a result, salvage value is not included in this assessment.
- e. Funding: The project is based on incremental costs, which are negative, but assumed to be \$0. Vehicle replacement is expected to proceed with existing funding.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



RC7. INDOOR WATER FIXTURES AND FITTINGS EFFICIENCY

PROJECT IDENTIFICATION:

Project ID: RC7
 Project Name: Indoor Water Fixtures and Fittings Efficiency
 Focus Area: Resource Conservation & Efficiency
 Year Established: 2018

RESPONSIBILITY:

Project Manager: Operations Manager
 Department: Public Works

PERFORMANCE:

Net Present Value: \$19,000
 Return on Investment: 109%
 Project Life: 10 years

GOALS:

Focus Area Goal: Reduce potable water consumption for City Operations by 20% by 2022 relative to 2013 baseline
Project Contribution: 19% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Reduce water consumption at city facilities by replacing flow fixtures with modern, high-efficiency fixtures.
- b. Measure(s): Reduce targeted buildings' annual water consumption by at least 20% by 2025 by replacing 80% of fixtures with low flow technologies.
- c. Actions: A 2014 audit of City facilities indicated that most fixtures / fittings were not low flow. Update the audit flow fixtures in City facilities to identify opportunities for replacement with low flow fixtures. Based on results of audits develop a schedule of flow fixtures to be replaced, source cost-effective, high efficiency replacement fixtures, and install the new fixtures. Develop a standard specification for flow fixtures in city facilities. High efficiency flow and flush fixtures are as follows: lavatory: 0.5 gallons per minute (gpm), kitchen sink: 1.8 gpm, toilet: 1.0 - 1.28 gallons per flush (gpf), urinal: 0.5 gpf.
- d. Cost(s) / Benefit(s): Implementation costs are estimated at \$22,000. Investment is expected to be phased over two years beginning in year 2. Benefits are based on reducing water consumption in the City's buildings by about 20% on average at an avoided cost rate of \$4 per 1000 gallons (kgal) and \$0.085per avoided kilowatt hour (water heating savings are estimated at 60 kWh / year per 1000 gallons avoided). The avoided cost rates are projected to increase by 2.4% on average based on the CBO's Economic Projections for 2017 - 2027 for the Consumer Price Index.
- e. Funding: To be determined.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



RC8. HVAC CONTROLS

PROJECT IDENTIFICATION:

Project ID: RC8
Project Name: HVAC controls
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Operations Manager
Department: Public Works

PERFORMANCE:

Net Present Value: \$174,000
Return on Investment: 136%
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce electricity consumption for City Operations by 15% by 2022 relative to 2013 baseline
Project Contribution: 4% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Utilize digital building automation software and controls to centrally control the City's HVAC systems.
- b. Target(s): Save an average of 14% of total electric billings at the buildings networked to the building automation system (BAS).
- c. Actions: Design and install a BAS solution, including the following: Update the BAS at the City Hall Complex to a modern, digital system with a software front end capable of remotely monitoring and controlling systems across the City. As necessary, update controllers at the City Hall Complex. Install networked rooftop unit (RTU) controllers, networked programmable thermostats, networked sensors and associated electrical equipment at Cultural Center, Fire Station 60, Fire Station 90, Hepburn Center, DPW Compound, Golden Isles Tennis Center and Foster Park. Control smaller, simpler buildings with a networked thermostat. Larger, more complex buildings will utilize networked controllers for key systems (e.g. RTUs, water heaters, etc.). Periodically re-commission the BAS.
- d. Costs: The estimated cost for installation / configuration of a BAS (software, controls hardware, low & high voltage, wiring, electrical/electronic installation, troubleshooting, etc.) is estimated at \$0.2/sf for small buildings and \$2/sf for large buildings. Estimates of savings average 14% of utility expenditure. Values are escalated by the average Consumer Price Index for the period 2017 - 2027.
- e. Funding: To be determined.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



RC9. RIGHT SIZE FLEET

PROJECT IDENTIFICATION:

Project ID: RC9
 Project Name: Right Size Fleet
 Focus Area: Resource Conservation & Efficiency
 Year Established: 2018

RESPONSIBILITY:

Project Manager: Fleet Administrator
 Department: Public Works

PERFORMANCE:

Net Present Value: \$447,000
 Return on Investment: 524%
 Project Life: 10 years

GOALS:

Focus Area Goal: Displace 10% of gasoline / diesel fuels with fuel efficiency or alternative fuels by 2022 relative to 2013 baseline
Project Contribution: 10% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Optimize the fleet by removing under-utilized or otherwise undesirable (e.g. aged, expensive to operate, obsolete, etc.) vehicles, without replacing them. Establish a motor pool that allows staff to reserve a vehicle when required.
- b. Measure(s): Remove approximately 80% of under-utilized / undesirable (e.g. aged, expensive to operate, obsolete, etc.) vehicles; with the remaining 20% establish a motor pool that allows staff to reserve a vehicle when required.
- c. Actions: Identify underutilized / undesirable vehicles that could be replaced with a motor pool vehicle. Estimate how many must be retained to develop a motor pool. Salvage identified vehicles and do not replace them. Establish a motor pool. Monitor vehicle usage in the motor pool. Overtime, calibrate the total number of vehicles and the number of vehicles in the motor pool to meet the City's identified needs.
- d. Cost(s)/Benefit(s): Costs are assumed to be \$0, although tools (such as consultants or software) may be required to establish and monitor the motor pool. Benefits include the salvage value of about 35 vehicles and avoided maintenance and fuel costs. Total avoided costs are projected to increase by 2.4% on average based on the CBO's Economic Projections for 2017 - 2027 for the Consumer Price Index.
- e. Funding: No funds are expected to be required for this project.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



RC10. EXPAND REUSE WATER PROJECTS

PROJECT IDENTIFICATION:

Project ID: RC10
Project Name: Expand Reuse Water Projects
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: City Engineer
Department: Public Works

PERFORMANCE:

Net Present Value: \$148,000
Return on Investment: 45%
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce potable water consumption for City Operations, Residential and Commercial Sectors from by 40% by 2040 relative to 2013 baseline
Project Contribution: 5% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

a. Objective: Expand the reuse water infrastructure in Three Islands to provide an alternative water supply for the landscaped medians. Decrease the amount of potable water used for irrigation in the City. Provide an alternative to potable water for private development irrigation. The project will be phased and each phase will have a specific timeline and deliverables. Phase 1 is nearing completion and includes installation of an 8-inch reuse water line from Wiley Street (City of Hollywood) to Scavo Park. Phase 1 allows irrigation of Scavo Park, medians located at north, south and west of the intersection of Three Islands Boulevard and Atlantic Shores Boulevard, and residential areas west of Three Islands Boulevard between NE 11th Street and Parkview Drive. Phase 2 involves installation of a reuse water line down Three Islands Boulevard from Scavo Park to East Hallandale Beach Boulevard. This water line will be designed to have the capacity to irrigate medians on East Hallandale Beach Boulevard. In addition, it will serve office building irrigation use, and residential areas/medians along Parkview Drive and Leslie Drive. Phase 3 includes installing a reuse water line from Three Islands Boulevard/East Hallandale Beach Boulevard west down East Hallandale Beach Boulevard to Federal Highway. Phase 3 will be evaluated after the completion of Phase 2. The costs and benefits of Phases 1 and 3 are not included in the analysis.

b. Target(s): Reduce government operations potable water consumption by 20% by 2022 and community water use by 40% by 2040. Volumes of reuse water will be metered to evaluate its share of water use over time.

c. Action(s): Staff will request the Phase 2 project be created for the design during the FY18/19 budget process. After October 1, 2018, staff shall procure professional services using CCNA for the design services. Commission approval will be required to approve the design services. The design phase is expected to take 5 months. The City will issue an Invitation to Bid. Staff will provide education and outreach to the community. The Construction Phase is expected to last 6 months.

d. Costs/Benefits: The cost for the pipe (not including the pump station) for Phase 1 of the project was \$224,000. In total, 3,200 linear feet of 8" PVC pipe and fittings were used, at \$70/LF. The cost per linear foot of pipe from Phase 1 was used to estimate costs for Phase 2. Design costs for Phase 2 were estimated at the median of the range of \$75,000 - \$100,000 provided by the City. Ocean outfall of wastewater will no longer be allowed in Florida by 2025. Cities with wastewater treatment plants, such as Hollywood, must find alternative ways to dispose of wastewater. Wastewater that is used as reuse water for irrigation is heavily treated and is a viable alternative to ocean outfall. Hallandale Beach receives a water withdrawal allocation from the South Florida Water Management District. This allocation limits the amount of water that the City can withdraw from the aquifer via its wells. The City's permit expires in 2033 and it is not known if the future permitted allocation will remain constant or will include an increase or decrease. Therefore, it is in the best interest of the City to replace its potable water usage for irrigation as much as possible. Economic benefits are calculated using a 96% cost reduction for reuse water compared to potable water. Since private users will be allowed to access reuse water for irrigation, benefits accrue both to the City government and the community.

e. Funding: Phase 1 of the project received two (2) grants from FDEP in the amounts of \$200,000 and \$240,000. For Phase 2 design, \$50,000 is available from the CVS Development Agreement and an additional \$25,000 will be requested from the Water Fund. Staff shall request funds for construction during the FY19/20 budget process.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



RC11. EXPANDED SERVICE HOURS WORK WEEK

PROJECT IDENTIFICATION:

Project ID: RC11
Project Name: Expanded Service Hours Work Week
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Human Resources Director
Department: Human Resources

PERFORMANCE:

Net Present Value: \$765,000
Return on Investment: ∞
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce electricity consumption for City Operations by 15% by 2022 relative to 2013 baseline
Project Contribution: 44% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Transition City operations (potentially only applicable to certain City Departments) to an extended service hour work week model – work schedules shift from a 5-day week to a 4-day week.
- b. Measures: Reduce water, energy, fuel, overtime and sick leave usage expenditures. These would be tracked in order to assess the efficacy of the program. Increase employee satisfaction. Employee satisfaction and morale will also be tracked via survey.
- c. Action(s): Compile case studies of other cities that have transitioned to a 4-day work week and request data either supporting or refuting the effectiveness of the program. Compile data from other cities and create a report. Present report to senior staff. Survey staff to gather their input and gauge their receptiveness. Present proposal to City Commission. Initiate outreach campaign geared toward City residents and businesses. Outreach to residents and businesses would be necessary in order to increase awareness of potential changes in City hours of operation. It will be important to promote the fact that numerous municipalities within Broward, Miami-Dade and Palm Beach counties are shifting to this work schedule. Staff education may be necessary, depending on what type of system the City potentially adopts. For example, if the City adopts a 4-day work week it must ensure that all staff adhere to the policy in order to achieve energy savings and counteract the feeling of “missing out” (access to senior management staff or ideas/information) by not working a 5-day week.
- d. Cost(s)/Benefit(s): Cost related to staff time to conduct research and develop a plan. Benefits are based on savings reported by Hollywood, FL and Miramar, FL after those Cities transitioned to an expanded service hours format. The cities realized about \$340,000 and \$330,000 in avoided water, electricity, fuel, overtime and sick leave usage, respectively. Savings are estimated at 42% and 66% of this level, respectively, then averaged, given the ratio of Hallandale Beach’s employees to the benchmark cities.
- e. Funding: No dedicated funding is required for this project.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



RC12. IRRIGATION EFFICIENCY

PROJECT IDENTIFICATION:

Project ID: RC12
 Project Name: Irrigation Efficiency
 Focus Area: Resource Conservation & Efficiency
 Year Established: 2018

RESPONSIBILITY:

Project Manager: Operations Manager
 Department: Public Works

PERFORMANCE:

Net Present Value: \$-7,000
 Return on Investment: -3%
 Project Life: 10 years

GOALS:

Focus Area Goal: Reduce potable water consumption for City Operations by 20% by 2022 relative to 2013 baseline
 Project Contribution: 61% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective: Conserve water by increasing the efficiency of city irrigation systems.
- b. Measure(s): Save 15% of water use accounts associated with irrigation relative to the 2016 baseline usage.
- c. Action: Procure and Install higher-efficiency equipment to replace existing equipment for all of the City's irrigation systems. Convert sprinklers to drip irrigation, use more efficient sprinkler heads, use weather and/or sensor-based irrigation controls, and properly maintain irrigation systems.
- d. Cost(s) / Benefit(s): Implementation costs are estimated at \$0.026 per avoided gallon, based on research conducted by US EPA and University of Texas. Benefits are based on avoided water charges. Values are projected to increase by 2.4%, on average, based on the CBO's Economic Projections for 2017 - 2027 for the Consumer Price Index. The project is expected to be completed over five years.
- e. Funding: To be determined.



CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY

MR1. INCREASE COMMUNITY-WIDE WASTE DIVERSION

PROJECT IDENTIFICATION:

Project ID: MR1
Project Name: Increase Community-wide Waste Diversion
Focus Area: Materials Minimization & Recycling
Year Established: 2018

RESPONSIBILITY:

Project Manager: Operations Manager
Department: Public Works

PERFORMANCE:

Net Present Value: \$1,066,000
Return on Investment: 54%
Project Life: 10 years

GOALS:

Focus Area Goal: Achieve a 30% diversion rate from recycling and composting by 2022 relative to 2013 baseline
Project Contribution: 100% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Increase the City's single family and multi-family garbage diversion rate for municipal solid waste (MSW). Create a robust education and outreach program to promote materials minimization and recycling.
- b. Measure(s): Increase the diversion rate for MSW by 5% annually from baseline level of 5%, to 30% over ten years. Diversion rates as calculated for this measure do not include bulk/yard waste, which is collected and disposed by Waste Management Inc. Diversion rates also do not include incineration/waste to energy as a diversion strategy.
- c. Action(s):
Improve Collection: Conduct waste and recycling audits to get a picture of the City's current diversion/contamination rates. Develop a better understanding of bulk/yard waste disposal so this category can be included in diversion strategies and the City's overall diversion goals. Research best practices to increase diversion rate. Research recycling rewards programs (Ex: Recycle Bank). Hire a Recycling Coordinator position or ensure that the Sanitation Superintendent is dedicated to increasing the City's recycling rate. Maintain back yard / side yard collection service by City employees with new rear-loading, compacting collection vehicles, which are already included in the City's annual vehicle replacement program. Increase the number of document shredding events in the City. Evaluate sanitation/recycling truck capacity and route efficiency. Consider tagging recycling that has a large amount of contamination, with eventual fines for repeat violators.
Recycling Bins/Containers: Ensure that all public spaces have recycling bins accompanying waste bins. Use larger recycling bins with lids. Consider smaller curbside waste bins and larger recycling bins – or giving customers the option to choose to pay extra for a larger waste bin or accept a smaller bin and agree to reduce waste generation and increase recycling rate. Ensure curbside bin consistency throughout the City (garbage bins should be a different color than recycling bins). Ensure that bins are properly identified – a sticker of the recycling guide should be attached to every bin.
Education/Outreach: Utilize education and outreach to boost recycling among the City's single family residents. Partner with local organizations (churches, schools, non-profits, businesses) to help promote recycling. Work with elected officials to help promote recycling program. Create an education program specifically geared toward schools. Promote recycling on sanitation trucks. Mandate recycling in multi-family buildings. Send a recycling guide to every resident. Host materials reduction and recycling workshops at Community events and condos. Target separate outreach for single family and multi-family residents. Promote outreach for electronic waste and hazardous waste drop off program. Educate City sanitation/janitorial staff about importance of recycling and proper techniques to ensure that recycling is separated from waste/garbage. Highlight residents/buildings that are recycling properly.
- d. Cost(s)/Benefits(s): New recycling containers are expected to cost \$500,000, with expenditures occurring in 2019 and 2020. \$150,000 per year is budgeted for a Recycling Coordinator who will plan and manage operational and infrastructure improvements, education and outreach. Substantial cost savings are possible if the City reduces the amount of waste that it sends to the landfill and increases its diversion rate. The City pays \$48/ton to dispose of waste and receives a rebate of \$28/ton for recycled content. Accordingly, every ton diverted generates a \$76 benefit to the City. Disposal costs are projected to increase by 2.4% annually on average based on the CBO's Economic Projections for 2018 - 2027 for the Consumer Price Index. Recycling revenue is assumed to stay flat (no increase).
- e. Funding: To be determined.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



MR2. GREEN PURCHASING PROGRAM

PROJECT IDENTIFICATION:

Project ID: MR2
Project Name: Green Purchasing Program
Focus Area: Materials Minimization & Recycling
Year Established: 2018

RESPONSIBILITY:

Project Manager: Procurement Director
Department: Procurement

PERFORMANCE:

Net Present Value: \$12,000
Return on Investment: ∞
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce electricity consumption for City Operations by 15% by 2022 relative to 2013 baseline
Project Contribution: 1% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Preferentially purchase consumables, durable goods, and cleaning products and materials that will enhance ecological sensitivity, promote the health and safety of staff and citizens and reduce operating expenses. Realize the City's role in creating a market for sustainable goods and foster an atmosphere of innovation. Act as a catalyst for entrepreneurship. Minimize the use of non-essential materials and practices.
- b. Measure(s): Purchasing is meticulously tracked by each Department. Comprehensively track purchases of consumables, durable goods and cleaning products by costs that meet criteria established under this program and compare to total purchases in those categories.
- c. Action(s): Create staff team to draft policy. Gradually increase its scope over time, beginning with consumables (e.g. office supplies) with recycled content, durables goods (e.g. electric equipment) with the ENERGY STAR label, and cleaning products and materials that meet standards such as Green Seal or Environmental Choice. Educate purchasers about the policy and its benefits. Comprehensively track purchases and report results annually.
- d. Cost/Benefits: Costs and benefits for consumables and cleaning materials were not estimated. It is possible that environmentally-preferable purchasing will be more expensive than business-as-usual. In depth research into replacement products will have to be done, but it may be impossible to avoid cost increases in some purchasing sectors. The market for green products and services is expanding which will likely bring down costs over time. ENERGY STAR electronics are assumed to be available at no incremental cost. Benefits: Electricity savings assume 20% of legacy electronics are replaced with ENERGY STAR devices each year. Energy savings are estimated at an average of 28% using the Savings Calculator for ENERGY STAR Qualified Office Equipment. After 5 years, all devices are assumed to be ENERGY STAR. Green purchasing benefits for other categories are more difficult to quantify, but may include reduced cost, improved health and wellness, GHG emissions reduction, reduced waste, reduced liability and reputational benefits.
- e. Funding: To be determined.



CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY

MR3. COMPOSTING FEASIBILITY ASSESSMENT

PROJECT IDENTIFICATION:

Project ID: MR3
 Project Name: Composting Feasibility Assessment
 Focus Area: Resource Conservation & Efficiency
 Year Established: 2018

RESPONSIBILITY:

Project Manager: Green Initiatives Coordinator
 Department: Public Works

PERFORMANCE:

Net Present Value: \$-48,000
 Return on Investment: -100%
 Project Life: 10 years

GOALS:

Focus Area Goal: Achieve a 30% diversion rate from recycling and composting by 2022 relative to 2013 baseline
Project Contribution: 0% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Complete a Composting Feasibility Assessment to assess the potential to increase waste diversion through a community-wide composting program.
- b. Target: To identify the potential cost avoidance to the City from diverting compostable waste through a municipal program, as well as the potential costs of implementing such a program by evaluating various options for program implementation (i.e. public/private partnership, cost sharing agreement with nearby local governments, or contracting with a composting service provider).
- c. Actions: Develop a Request for Proposal (RFP) for a Composting Feasibility Assessment, secure funding, accept proposals, and procure the study.
- d. Exact costs of a Composting Feasibility Assessment are unknown, but should be below \$50,000. Benefits will include a clear understanding of various options for implementing composting in the City, as well as their pros and cons, and financial implications. Financial benefits related to waste diversion will accrue only after a composting program is selected and implemented.
- e. Funding: To be determined

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



LT2. BIKESHARE

PROJECT IDENTIFICATION:

Project ID: LT2
Project Name: Bikeshare
Focus Area: Land Use & Transportation
Year Established: 2018

RESPONSIBILITY:

Project Manager: Transportation & Transit Planner
Department: Development Services

PERFORMANCE:

Net Present Value: \$0
Return on Investment: ∞
Project Life: 10 years

GOALS:

Focus Area Goal: Increase the percentage of the bicycle / pedestrian network that is level of service B or better by 10% annually by 2022 relative to 2013 baseline
Project Contribution: of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective: Provide residents with a dock-less bicycle share program. Bikes are rented via a mobile applications. They are electronically locked/unlocked and tagged with a GPS.
- b. Measure: Establish a successful dockless bikeshare service in the City. Success can be determined based on criteria and data on system usage from vendors (e.g. travel miles, miles per hour, routes, pick up and drop off locations, rental duration, ridership, etc.).
- c. Action: Research best practices in comparable cities. Research necessary permits and regulatory requirements. Develop a bike share request for proposals. Research permitting requirements and apply for necessary permits. Establish city-wide regulations for operation of the Bikeshare system. Monitor performance of the system.
- d. Costs/Benefits: Dockless bikeshare systems are established by third-party, for-profit entities. They must be permitted / regulated to operate in the City, but there is no upfront capital cost required on the part of the City. Investments in the City's bicycle infrastructure that would support ridership are outside the scope of this project.
- e. Funding: No funding is required.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



LT3. BUILD-OUT BICYCLE AND PEDESTRIAN INFRASTRUCTURE

PROJECT IDENTIFICATION:

Project ID: LT3
Project Name: Build-out Bicycle and Pedestrian Infrastructure
Focus Area: Land Use & Transportation
Year Established: 2018

RESPONSIBILITY:

Project Manager: Transportation & Transit Planner
Department: Development Services

PERFORMANCE:

Net Present Value: \$-660,000
Return on Investment: -100%
Project Life: 10 years

GOALS:

Focus Area Goal: Increase the percentage of the bicycle / pedestrian network that is level of service B or better by 10% annually by 2022 relative to 2013 baseline
Project Contribution: of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Improve bike and pedestrian level of service in the City and reduce vehicle miles traveled (VMT). Achieve connectivity. Improve bike and pedestrian safety. Ensure equity of infrastructure expansion. Ensure that improvements are aesthetically pleasing.
- b. Measure: Increase the percentage of bicycle / pedestrian network that is Level of Service B or better by 10% annually through 2022.
- c. Action(s): Adopt Bicycle and Pedestrian Level of Service (LOS) standards. Assess gaps in connectivity (bike and pedestrian) based on LOS and Basis of Design Report (BODR) and the Draft 2016 Multimodal Mobility Plan. Expand upon City's bike/ped master map to create an action plan. Implement bike lane projects. Create uniform signage. Consider complementary solutions to encourage walking / biking (e.g. Wilton Manor's Hopper Shuttle Service). Create education and outreach plan.
- d. Cost/benefits: Costs include development of LOS standards and implementation of bike lane projects. These costs are derived from the draft 2016 multimodal mobility plan. Incremental investments in sidewalk improvements outlined in the BODR are assumed to occur outside the scope of this project. The benefits of reduced VMT and increased bicycle and pedestrian travel are significant, including reduced congestion and pollution, improved quality of life. Nevertheless, these benefits are difficult to quantify and are assumed to be zero for the purposes of this estimation.
- e. Funding: To be determined. (Grants, mobility bond, transportation fund (gas tax), CRA, etc.)



CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY

NR1. DEVELOP A VULNERABILITY / ADAPTATION ASSESSMENT

PROJECT IDENTIFICATION:

Project ID: NR1
Project Name: Develop a Vulnerability / Adaptation Assessment
Focus Area: Natural Resources & Resiliency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Green Initiatives Coordinator
Department: Public Works

PERFORMANCE:

Net Present Value: \$-82,000
Return on Investment: -100%
Project Life: 10 years

GOALS:

Focus Area Goal: Complete a vulnerability assessment and adaptation action plan by 2022 relative to 2013 baseline
Project Contribution: 100% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

a. Objective: Allow the City to understand how roadways, buildings, infrastructure and neighborhoods will be impacted by sea level and ground water rise, increases/decreases in precipitation, storm surge and other future impacts related to climate change. Allow the City to better serve its residents that will be impacted by sea level rise and other impacts in the future. Understand how demographics may shift as a result of sea level rise/other factors. Communicate risk to the community. Create a list of projects (engaging City staff from multiple departments) in prioritizing projects and funding that will allow the City to adapt and mitigate risk. Discuss the potential reality of a managed retreat from coastal areas. Compile best practice information explaining how the City can maintain infrastructure that will be impacted by environmental factors in the future (ex: how to maintain underground infrastructure that is constantly or oftentimes inundated). Discuss best practices that other coastal south Florida communities have implemented to adapt to and mitigate future risk. Gain an understanding of City policies that should be updated or created in order to address future vulnerability. Understand economic impacts of future conditions and the cost of maintaining a business as usual approach.

b. Measure(s): Procure Vulnerability assessment in 2018. Begin implementing recommendations in 2018.

c. Action(s): Create outline for scope of work and obtain proposal from consultants. Choose a consultant and negotiate final scope of work, deliverables, contract etc. Develop maps and graphics to show vulnerability of various assets in the City under multiple SLR scenarios. Overlay various risks and demographics in the City. Quantify potential economic losses under different scenarios. Develop strategies to manage risk. Develop communications strategy and deliverables to convey risk to community. Host two Community Workshops or smaller informal events at condos/other gathering places to discuss vulnerability assessment

d. Costs/Benefits: Estimate \$50,000 or less for Vulnerability Assessment. Benefits: CRS credit is available for activities related to a vulnerability and adaptation study. In addition, adaptation and flood hazard mitigation in coastal Louisiana has shown a savings of \$4 of disaster recovery costs for every \$1 spent on elevation and flood proofing. Understanding the City's future risk and creating programs and policies to ensure a resilient future will allow the City to exist in a recognizable form in the future. The benefits of acting early, before the impacts of CC and SLR are evident, are impossible to overstate. People have the tendency to discount the future and plan for the present. If coastal communities are to remain viable we must decide to prepare for an uncertain future. A vulnerability assessment will help make that future much less uncertain and aid the City in prioritizing adaptation/mitigation projects.

e. Funding: This project should be able to be funded through grants, such as the ECO Broward Grant or the FDEP's Resilient Coastal Communities Grant. If the City is unsuccessful in obtaining a grant for the project, staff can include a request for funding during the FY18/19 or FY19/20 budget cycle.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



NR3. DUNE PROTECTION PLAN

PROJECT IDENTIFICATION:

Project ID: NR3
Project Name: Dune Protection Plan
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Public Works Director
Department: Public Works

PERFORMANCE:

Net Present Value: \$0
Return on Investment: ∞
Project Life: 10 years

GOALS:

Focus Area Goal: Complete a dune management plan by 2022 relative to 2013 baseline
Project Contribution: 100% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Create a comprehensive dune management plan to improve resiliency of City's dune system and prevent beach erosion by preserving and restoring primary coastal dunes. Remove invasive species from public and private beach areas. Work with private property owners on the beach to improve the dune system. Increase public education and awareness of importance of dune restoration and maintenance. Create and elaborate upon re-nourishment funding mechanisms. Aid in planning for impacts of sea level rise. Create a long term maintenance plan for the dune system.
- b. Measures: Creation of dune management plan.
- c. Actions: Research local Dune Management Plans (e.g. the Cities of Hollywood and Miami Beach hired a consultant to complete a plan). This plan will be included in future updates to the City's Comprehensive Plan). Hallandale Beach will create a team, led by the Green Initiatives Coordinator, to evaluate best management practices and adapt them to its own plan. Creation of the Plan will require working closely with private property owners on the beach, partnering with relevant local organizations, such as YEA, in order to create an impactful outreach and education strategy, and holding community workshops to educate residents and businesses about importance of dunes. The final plan will include, among other things, a description of current conditions; an explanation of why dune management is necessary and desirable; research into the practicality of other potential erosion control measures that can work in conjunction with a dune system; explanation of what comprises an optimal dune system in Hallandale Beach; a plan for actual dune system in Hallandale Beach; discussion and graphics outlining recommended dune vegetation; dune habitat creation techniques and planting guidelines; discussion of constraints to achieving optimal dune system; analysis of how dune system may impact wildlife (ex: nesting sea turtles); development of an implementation plan and budget, a long-term maintenance plan and an education and outreach plan; reporting requirements; and incorporation on the plan into City Beach Renourishment projects.
- d. Cost(s) / Benefit(s): The plan will be developed in-house by staff. As a result, incremental costs are assumed to be zero. Benefits are substantial, including protection of private property, infrastructure, commerce and natural resources. While significant, quantification of these benefits is challenging and uncertain. Accordingly, they are assumed to be zero.
- e. Funding: The Dune Management Plan will be developed by City staff, therefore there should not be a fiscal impact in creating the Plan. Funding may be necessary for program outreach and education once the Plan has been completed. This recommendation will be included in the Plan.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



NR4. LOW IMPACT DEVELOPMENT STANDARDS

PROJECT IDENTIFICATION:

Project ID: NR4
Project Name: Low Impact Development Standards
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Development Services Director
Department: Development Services

PERFORMANCE:

Net Present Value: \$0
Return on Investment: ∞
Project Life: 10 years

GOALS:

Focus Area Goal: Improve the City's CRS rating to 500% by 2022 relative to 2013 baseline
Project Contribution: 0% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

a. Objective: Increase City's capacity to manage stormwater. Promote use of environmental services to supplement traditional stormwater management in the City. Increase awareness of LID strategies. Utilize LID projects as educational case studies to promote program. Minimize impervious surface area in the City. Integrate LID strategies into City properties and right-of-way. Integrate LID principles into Development Regulations.

b. Measure: Creation of LID regulations in the City Code.

c. Actions: Research LID practices/regulations in Florida and southeastern U.S., such as the LID manuals developed by the Cities of Jacksonville and Sarasota. Identify current sections of the City's code and comprehensive plan that incorporate the principles of LID. Determine what additional strategies are desirable and applicable in Hallandale Beach (ex: medians converted to bioretention swales, permeable pavement requirements etc.) and determine what strategies work synergistically to create the most positive benefit. Create an internal City committee to evaluate the feasibility of LID regulations, rank and prioritize strategies for inclusion in an LID regulation, if applicable. Develop draft recommendations, including fiscal and maintenance impacts. Bring recommendations forth to City Manager and to City Commission, if directed. Implement LID standards on City properties and right-of-way. Incorporate LID principles into Development Regulations, as warranted. Update Development Review Committee, City staff, developers, residents etc. about new LID Code, if applicable. Showcase success stories in the community with visual signage.

d. Costs/Benefits: Staff time will be required to develop LID policy recommendations. No additional cost is expected. Benefits include minimization of investments in traditional stormwater management infrastructure, flood abatement, water quality improvement and beautification of the City. Flood abatement benefits have the potential to influence the City's CRS classification, which could potentially reduce flood insurance premiums throughout the City. These benefits are not quantified at this time.

e. Funding: This project will be completed by City staff.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



EO1. INTEGRATE SUSTAINABILITY INTO EMPLOYEE TRAINING AND INCREASE EMPLOYEE PARTICIPATION

PROJECT IDENTIFICATION:

Project ID: EO1
Project Name: Integrate Sustainability into Employee Training and Increase Employee Participation
Focus Area: Education & Outreach
Year Established: 2018

RESPONSIBILITY:

Project Manager: Green Initiatives Coordinator
Department: Public Works

PERFORMANCE:

Net Present Value: \$2,000
Return on Investment: 5%
Project Life: 10 years

GOALS:

Focus Area Goal: Train 100% of employees to understand and contribute to its sustainability initiatives by 2022 relative to 2013 baseline
Project Contribution: 100% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Increasing employee awareness of City sustainability programs and policies. Help to achieve behavior change in City employees so that they conduct their daily activities in a more sustainable way. Increase employee participation in sustainability initiatives. Educate employees about sustainability initiatives the City offers so that they are better able to educate residents. Gather input and feedback from staff members about sustainability programs/policies.
- b. Target(s): Ensure 100% of staff members receive sustainability training.
- c. Actions: Develop a training and participation incentive program outline, with input from the Education and Outreach Focus Group. Receive approval from Public Works Director/Assistant City Manager. Receive approval from Human Resources Director and City Manager, if needed. Set up multiple training events to reach all City employees. Training will be conducted by department (it is possible to combine small departments, and make allowances to include training employees with non-traditional work hours). Track number of employees participating in sustainability projects. Create sustainability projects to raise internal awareness (e.g. City employee Trashion Show) or competitions (recycling, litter pick up, beach cleanup) and offer rewards (shirts, gift card, extra casual dress day, extra half vacation day).
- d. Cost(s) / Benefit(s): Training would be conducted by City staff. Additional costs incentives, e.g. t-shirts, gift cards, etc., estimated at \$3,500/year. Feedback, education and awareness campaigns have been shown to produce savings (e.g. on utility expenditures) of 0 to 10%. This measure assumes just 0.2% savings from greater employee awareness of the city's use of electricity, water and fuel and their impact on expenses, the environment and the community. Increased employee awareness of sustainability initiatives will promote better adherence to sustainability policies and increase employee engagement in sustainability programs. Other benefits include improved employee morale and serving as a team building activity. A final benefit is improved service. If staff better understands programs they will be able to more effectively communicate to residents.
- e. Funding: To be determined. This is a low cost initiative. Staff time will be needed in order to complete this project.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



EO2. COMMUNICATIONS PLAN

PROJECT IDENTIFICATION:

Project ID: EO2
 Project Name: Communications Plan
 Focus Area: Resource Conservation & Efficiency
 Year Established: 2018

RESPONSIBILITY:

Project Manager: IT Director
 Department: Innovation Technology

PERFORMANCE:

Net Present Value: \$0
 Return on Investment: ∞
 Project Life: 10 years

GOALS:

Focus Area Goal: Develop a sustainability communications plan by 2022 relative to 2013 baseline
 Project Contribution: 100% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective: Create a comprehensive communications plan that lays out marketing strategy, responsibility and content for each audience (staff, residents, businesses, vendors, visitors etc.). The Communications Plan will aid the Green Initiatives Coordinator in tracking program outreach.
- b. Measure(s): Completion of Communications Plan. Tracking outreach to ensure that it adheres to the goals outlined in the Communications Plan.
- c. Action(s): The Green Initiatives Coordinator will research best practice case studies from other entities and develop an outline for the City's Plan, coordinating with the IT Department, City Manager's Office and other Departments as necessary. Coordinator will discuss first draft of Plan with Public Works Director and IT Director. Coordinator will draft final Plan
- d. Cost(s) / Benefit(s): This is a no cost initiative – it will require staff time.
- e. Funding: No funding is required for this project.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



EO3. DEVELOP GREEN EVENT POLICIES

PROJECT IDENTIFICATION:

Project ID: EO3
Project Name: Develop Green Event Policies
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Green Initiatives Coordinator
Department: Public Works

PERFORMANCE:

Net Present Value: \$0
Return on Investment: ∞
Project Life: 10 years

GOALS:

Focus Area Goal: Reduce total City operations waste by 5% through source reduction by 2022 relative to 2013 baseline
Project Contribution: 0% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Increase sustainability of City events and reduce the amount of waste generated at each event (both internal and external). Educate vendors and staff about new green event policy. Reduce the carbon footprint of City events. Work toward ensuring that City giveaways are reusable. Increase recycling at City events.
- b. Measures: Divert at least 30% of event waste from the landfill. Reduce total waste volume at events by at least 5%. Track the percentage of event materials purchases that meet Green Event criteria (to be established).
- c. Actions: The Green Initiative Coordinator will research best practice Green Event Policies (i.e. from peer municipal entities, colleges / universities, and the private sector) and create a draft Green Event Policy outline in collaboration with the Event Coordinator. Drafts will be reviewed and refined by the Public Works Director and Parks Director before finalization and approval by the City Manager. The policy will focus on eliminating and replacing key items used at events such as plastic water bottles and bags, Styrofoam, straws, plastic table cloths and minimizing waste. The Coordinators will create an outreach plan for City staff, residents and vendors. Outreach methods may include outreach via email, social media, website and print materials. Content will include clear and concise guidelines for eliminating unnecessary waste and harmful products from events. The Coordinators will track the dollars spent on sustainable vs non sustainable products at events and audit waste and recycling generated at each event. The environmental benefit of using preferable products will also be tracked and reported.
- d. Cost(s) / Benefit(s): This is a no cost initiative requiring staff time only. Event materials identified as harmful will be replaced by low-cost / no cost alternatives. Benefits include waste minimization and improved environmental quality of events. These benefits are not quantified at present.
- e. Funding: No additional funding is required for this project.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



FE1. UTILITY MANAGEMENT SYSTEM

PROJECT IDENTIFICATION:

Project ID: FE1
Project Name: Utility Management System
Focus Area: Funding & Evaluation
Year Established: 2018

RESPONSIBILITY:

Project Manager: IT Director
Department: Innovation Technology

PERFORMANCE:

Net Present Value: \$19,000
Return on Investment: 36%
Project Life: 10 years

GOALS:

Focus Area Goal: Measure and monitor 50% of sustainability key performance indicators by 2022 relative to 2013 baseline
Project Contribution: 90% of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Utilize software tools to manage the City's FPL energy utility bills on a monthly basis, including: auditing bills, tracking usage and costs, benchmarking facility performance, tracking the results of energy savings projects, analyzing trends and reporting on performance. Over time, expand the tool to include other facilities-based utilities and services, including water and waste.
- b. Measure(s): Save an average of 1% of total electric billings from identifying erroneous charges and / or identifying anomalies and performing corrective actions.
- c. Actions:: Select/procure, configure/interface/populate and train staff to operate software to manage utilities. The solution should be able to accurately track, trend and report on utility use and expenditure, while controlling for weather, floor area, occupancy and other parameters associated with utility use. It should interface with ENERGY STAR Portfolio Manager and result in a fully functional portfolio of City facilities in that software. Optionally, the solution should interface with the City's asset management and billing systems and accept the industry standard format for electronic utility billing data transfer. Obtain a utility management solution. Populate ENERGY STAR Portfolio Manager w/ facility data. Procure off-the-shelf via a customized solution or develop in-house a fully featured solution.
- d. Cost(s) / Benefit(s): The cost for an off-the-shelf Utility Management Solution is estimated at \$55,000 for implementation, configuration, customization, interfaces and training. Annual software licensing/service fee for is estimated at \$10,000 per year. Estimates of savings are 1% of annual utility expenditure. Values are escalated by the average Consumer Price Index for the period 2018 - 2027.
- e. Funding: To be determined.



CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY

FE2. REVOLVING FUND

PROJECT IDENTIFICATION:

Project ID: FE2
Project Name: Revolving Fund
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Finance Director
Department: Finance

PERFORMANCE:

Net Present Value: \$0
Return on Investment: ∞
Project Life: 10 years

GOALS:

Focus Area Goal: Fund sustainability action plan projects with 50% internal funds, 50% external funds by 2022 relative to 2013 baseline
Project Contribution: of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Create a reoccurring and long-term source of funding for sustainability projects. Leverage the cost savings realized from high ROI projects to help fund low ROI, but environmentally impactful, projects in the future. Reduce the amount of funding needed from the City's General Fund for sustainability projects. Projects from all departments in the City could contribute to the fund (cost sharing between departments).
- b. Measure(s): Establish a fund by 2019.
- c. Action(s): Create a Revolving Fund Management Committee (Sustainability Coordinator, Assistant Director of Public Works, Budget Manager, Assistant Director of Finance and others). Create accounting and financial procedures plan (setting up Revolving Fund, how funds are released from fund, how fund balance is increased by receiving energy savings etc.). Create guidelines designating which projects qualify for funding through Revolving Fund (energy savings of at least X%, payback period of X years and X% of energy cost savings from project being transferred back to Revolving Fund, educational or demonstrational value of project, etc). Create guidelines for submitting projects for funding through Revolving Fund. Create guidelines for tracking performance of funded projects (estimated cost savings and measured energy consumption, payback period, energy audits etc.). Identify available rebate programs for which the City's existing or planned projects would qualify (rebate would be allocated to RF). Estimate energy savings associated with current or proposed projects and transfer savings to Revolving Fund. Apply for federal, state, local and private grants for energy efficiency projects. Allocate a portion of annual investment earnings to the Revolving Fund. Recommend and request (from the City Commission) a one-time infusion of seed capital from operating budget.
- d. Cost(s) / Benefit(s): There are no direct costs or benefits associated with this project.
Education: Educate members of City staff so that they become aware of program's existence and requirements. Promote Revolving Fund success stories to businesses and residents so that they may be spurred to take similar energy efficiency action. Educate members of Revolving Fund Management Committee (this is a new concept and staff members will most likely require training and research to foster an understanding of the concept and implementation).
- e. Funding: Seed capital authorized by City Commission or receipt of grants. See above for more funding options.

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



FE3. COMPLETE A GHG INVENTORY AND SET REDUCTION TARGETS

PROJECT IDENTIFICATION:

Project ID:	FE3
Project Name:	Complete a GHG Inventory and Set Reduction Targets
Focus Area:	Resource Conservation & Efficiency
Year Established:	2018
RESPONSIBILITY:	
Project Manager:	Green Initiative Coordinator
Department:	Public Works
PERFORMANCE:	
Net Present Value:	\$-24,000
Return on Investment:	-100%
Project Life:	1 years
GOALS:	
Focus Area Goal:	Measure and monitor 50% of sustainability key performance indicators by 2022 relative to 2013 baseline
Project Contribution:	of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Aid the City in understanding the magnitude and sources of GHG emissions community-wide and in doing so, gain a better understanding of which sectors in the community are most heavily contributing to climate change. The Inventory will also allow the City to create a targeted set of consistent policies, strategies and projects aimed at reducing emissions. The eventual GHG inventory and targets will be folded in the Sustainability Action Plan.
- b. Measure(s) The GHG inventory will map emissions by sector and will be a quantitative study that will identify opportunities and solutions to reduce the City's emissions. The inventory will use 2016 as a baseline year and subsequent evaluations will track energy consumption, emissions (carbon dioxide equivalency) etc. against this year. The City will continually evaluate yearly progress and fine tune projects to achieve desired results. Each project that the City will undertake will be tied to a quantitative reduction target and an actual realized value. The effectiveness of the program or policy can be monitored through tracking reductions in GHG emissions over time.
- c. Actions: Receive grant funding, Issue a Request for Quotes, select firm and negotiate Scope of Work. Hold Kick-Off Meeting with City Staff to discuss Scope of Work and project schedule. Collect data, both – internal (water/wastewater, fuel and electricity use, fleet operations etc.) and external (industrial, commercial and residential electricity, natural gas and fuel oil consumption, transportation and solid waste disposal). Develop GHG inventory using web-based inventory software such as the International Council for Local Environmental Initiatives (ICLEI) ClearPath software. Benchmark Hallandale Beach against peer cities, forecast emissions trends under business as usual scenario, set tangible emissions reductions goals, and incorporate GHG inventory into SAP.
- d. Cost/Benefits: Estimated costs are \$24,500. Benefits are not quantifiable. However, the Inventory will allow the City to pinpoint areas (ex: buildings and/or roadways) that are in need of improvement – both internally and community-wide. The Inventory will help staff make the case for implementing future sustainability projects, as it will forecast emissions that will be expected to occur under business as usual and potential future action scenarios.
- e. Funding: Grant funding will be sought to fund this project (e.g. the ECO Broward grant)

CITY OF HALLANDALE BEACH SUSTAINABILITY ACTION PLAN PROJECT MANAGEMENT FORM SUMMARY



FE4. STAR COMMUNITIES CERTIFICATION

PROJECT IDENTIFICATION:

Project ID: FE4
Project Name: STAR Communities Certification
Focus Area: Resource Conservation & Efficiency
Year Established: 2018

RESPONSIBILITY:

Project Manager: Green Initiative Coordinator
Department: Public Works

PERFORMANCE:

Net Present Value: \$-13,000
Return on Investment: -100%
Project Life: 1 years

GOALS:

Focus Area Goal: Measure and monitor 50% of sustainability key performance indicators by 2022 relative to 2013 baseline
Project Contribution: of Focus Area Goal

PROJECT DESCRIPTION:

- a. Objective
- b. Measure(s)
- c. Action
- d. Cost(s)/Benefit(s)
- e. Funding

- a. Objective: Receive recognition for the sustainable policies and programs that the City has achieved to date and gain a better understanding of areas that can be improved in the future. Use the Certification results to inform City staff and community members of the steps that the City is taking to achieve sustainability. Measure performance across social, economic and environmental performance areas.
- b. Measure: Achieve a 3-STAR Rating.
- c. Actions: Once the City is ready to report, it must subscribe to the STAR Full Access Package to access the full suite of tools and resources. Create a certification team, composed of internal staff members or an external green team comprised of community members. Align existing policies and programs with Rating System (1-2 months). Gather data and enter into STAR's online reporting platform (4-6 months) – 526 measures in total. Submit online application for verification by STAR. Make amendments and edits as needed. STAR Community Rating is valid for 4 years. Then City must report on progress and recertify.
- d. Costs/Benefits: Annual subscription to STAR Full Access Package is \$1,000/year. Verification is a one time fee of \$3,000. The certification process will be completed by City staff and possibly with the help of a community green team. Benefits cannot be quantified. However, the process will help the City track and evaluate its performance, communicate progress to stakeholders, and enhance the City's brand.
- e. Funding: Grant funding will be sought to fund this project.

BUDGETS

For each project, net benefits / costs (benefits minus costs), costs and benefits are shown over ten years. The total for each project and year are shown.

NET BENEFITS / COSTS

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
LED Streetlights	-\$54,333	-\$43,333	-\$33,333	\$32,000	\$33,000	\$34,000	\$35,000	\$35,000	\$36,000	\$37,000	\$111,000
LED Interior Lighting	\$0	\$0	\$0	-\$33,000	-\$24,000	\$17,000	\$18,000	\$18,000	\$19,000	\$19,000	\$34,000
Solar Thermal Systems	\$0	\$0	-\$13,000	-\$9,500	-\$9,500	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	-\$22,000
Existing City Building Commissioning	-\$52,000	\$29,000	\$29,000	\$20,000	\$14,000	-\$38,000	\$43,000	\$44,000	\$34,000	\$30,000	\$153,000
Electric Vehicles & Infrastructure	\$0	-\$19,643	-\$11,027	\$17,241	\$17,655	\$18,079	\$18,513	\$18,957	\$19,412	\$32,378	\$111,564
Increase Fuel Economy	\$4,499	\$9,214	\$14,153	\$14,493	\$14,840	\$15,197	\$15,561	\$15,935	\$16,317	\$16,709	\$136,917
Indoor Water Fixtures and Fittings Efficiency	\$0	-\$7,800	-\$7,000	\$5,200	\$5,300	\$5,400	\$5,500	\$5,700	\$5,800	\$5,900	\$24,000
HVAC controls	-\$57,208	-\$49,424	\$37,454	\$38,353	\$39,274	\$40,216	\$41,181	\$42,170	\$43,182	\$44,218	\$219,417
Right Size Fleet	\$42,845	\$53,177	\$63,509	\$41,329	\$51,661	\$51,661	\$51,661	\$51,661	\$51,661	\$51,661	\$510,825
Expand Reuse Water Projects	-\$88,000	-\$443,000	\$88,196	\$90,406	\$92,669	\$94,986	\$97,359	\$99,789	\$102,278	\$104,826	\$239,509
Expanded Service Hours Work Week	\$0	\$89,708	\$91,861	\$94,066	\$96,324	\$98,635	\$101,003	\$103,427	\$105,909	\$108,451	\$889,384
Irrigation Efficiency	-\$13,000	-\$12,000	-\$10,000	-\$8,000	-\$6,000	\$9,000	\$9,000	\$9,000	\$10,000	\$10,000	-\$2,000
Increase Community-wide Waste Diversion	\$139,976	-\$305,158	-\$202,439	\$151,427	\$254,734	\$254,734	\$254,734	\$254,734	\$254,734	\$254,734	\$1,312,210
Green Purchasing Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Composting Feasibility Assessment	\$0	-\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$50,000
Bikeshare	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Build-out Bicycle and Pedestrian Infrastructure	\$0	-\$10,000	-\$170,000	-\$280,000	-\$270,000	\$0	\$0	\$0	\$0	\$0	-\$730,000
Develop a Vulnerability / Adaptation Assessment	\$0	-\$86,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$86,000
Dune Protection Plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Low Impact Development Standards	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Integrate Sustainability into Employee Training and Increase Employee Participation	\$3,000	-\$500	-\$400	-\$300	-\$200	-\$200	-\$100	\$0	\$100	\$200	\$1,600
Communications Plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Develop Green Event Policies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Management System	-\$40,611	\$6,614	\$6,845	\$7,081	\$7,323	\$7,571	\$7,824	\$8,084	\$8,350	\$8,622	\$27,703
Revolving Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Complete a GHG Inventory and Set Reduction Targets	\$0	-\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$25,000
STAR Communities Certification	\$0	-\$4,000	-\$1,000	-\$1,000	-\$1,000	-\$1,000	-\$4,000	-\$1,000	-\$1,000	-\$1,000	-\$15,000
Total	-\$114,832	-\$868,144	-\$117,181	\$179,796	\$316,079	\$609,279	\$696,236	\$707,456	\$707,742	\$724,698	\$2,841,130
Payback (Years)											6.0

COST

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
LED Streetlights	-\$64,333	-\$64,333	-\$64,333	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$193,000
LED Interior Lighting	\$0	\$0	\$0	-\$41,000	-\$41,000	\$0	\$0	\$0	\$0	\$0	-\$82,000
Solar Thermal Systems	\$0	\$0	-\$14,000	-\$10,500	-\$10,500	\$0	\$0	\$0	\$0	\$0	-\$35,000
Existing City Building Commissioning	-\$80,000	\$0	\$0	\$0	\$0	-\$80,000	\$0	\$0	\$0	\$0	-\$160,000
Electric Vehicles & Infrastructure	\$0	-\$27,864	-\$27,864	\$0	\$0	\$0	\$0	\$0	\$0	\$12,500	-\$43,229
Increase Fuel Economy	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Indoor Water Fixtures and Fittings Efficiency	\$0	-\$10,000	-\$12,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$22,000
HVAC controls	-\$75,000	-\$86,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$161,000
Right Size Fleet	\$32,513	\$32,513	\$32,513	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$97,539
Expand Reuse Water Projects	-\$88,000	-\$443,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$531,000
Expanded Service Hours Work Week	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Irrigation Efficiency	-\$15,000	-\$15,000	-\$15,000	-\$15,000	-\$15,000	\$0	\$0	\$0	\$0	\$0	-\$75,000
Increase Community-wide Waste Diversion	\$0	-\$550,000	-\$550,000	-\$300,000	-\$300,000	-\$300,000	-\$300,000	-\$300,000	-\$300,000	-\$300,000	-\$3,200,000
Green Purchasing Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Composting Feasibility Assessment	\$0	-\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$50,000
Bikeshare	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Build-out Bicycle and Pedestrian Infrastructure	\$0	-\$10,000	-\$170,000	-\$280,000	-\$270,000	\$0	\$0	\$0	\$0	\$0	-\$730,000
Develop a Vulnerability / Adaptation Assessment	\$0	-\$86,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$86,000
Dune Protection Plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Low Impact Development Standards	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Integrate Sustainability into Employee Training and Increase Employee Participation	\$0	-\$3,500	-\$3,500	-\$3,500	-\$3,500	-\$3,500	-\$3,500	-\$3,500	-\$3,500	-\$3,500	-\$31,500
Communications Plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Develop Green Event Policies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Management System	-\$50,000	-\$3,000	-\$3,000	-\$3,000	-\$3,000	-\$3,000	-\$3,000	-\$3,000	-\$3,000	-\$3,000	-\$77,000
Revolving Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Complete a GHG Inventory and Set Reduction Targets	\$0	-\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	-\$25,000
STAR Communities Certification	\$0	-\$4,000	-\$1,000	-\$1,000	-\$1,000	-\$1,000	-\$4,000	-\$1,000	-\$1,000	-\$1,000	-\$15,000
Total	-\$339,820	-\$1,345,185	-\$828,185	-\$654,000	-\$644,000	-\$387,500	-\$310,500	-\$307,500	-\$307,500	-\$295,000	-\$5,419,189

BENEFITS

Project	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
LED Streetlights	\$10,000	\$21,000	\$31,000	\$32,000	\$33,000	\$34,000	\$35,000	\$35,000	\$36,000	\$37,000	\$304,000
LED Interior Lighting	\$0	\$0	\$0	\$8,000	\$17,000	\$17,000	\$18,000	\$18,000	\$19,000	\$19,000	\$116,000
Solar Thermal Systems	\$0	\$0	\$1,000	\$1,000	\$1,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$13,000
Existing City Building Commissioning	\$28,000	\$29,000	\$29,000	\$20,000	\$14,000	\$42,000	\$43,000	\$44,000	\$34,000	\$30,000	\$313,000
Electric Vehicles & Infrastructure	\$0	\$8,221	\$16,837	\$17,241	\$17,655	\$18,079	\$18,513	\$18,957	\$19,412	\$19,878	\$154,793
Increase Fuel Economy	\$4,499	\$9,214	\$14,153	\$14,493	\$14,840	\$15,197	\$15,561	\$15,935	\$16,317	\$16,709	\$136,917
Indoor Water Fixtures and Fittings Efficiency	\$0	\$2,200	\$5,000	\$5,200	\$5,300	\$5,400	\$5,500	\$5,700	\$5,800	\$5,900	\$46,000
HVAC controls	\$17,792	\$36,576	\$37,454	\$38,353	\$39,274	\$40,216	\$41,181	\$42,170	\$43,182	\$44,218	\$380,417
Right Size Fleet	\$10,332	\$20,664	\$30,996	\$41,329	\$51,661	\$51,661	\$51,661	\$51,661	\$51,661	\$51,661	\$413,286
Expand Reuse Water Projects	\$0	\$0	\$88,196	\$90,406	\$92,669	\$94,986	\$97,359	\$99,789	\$102,278	\$104,826	\$770,509
Expanded Service Hours Work Week	\$0	\$89,708	\$91,861	\$94,066	\$96,324	\$98,635	\$101,003	\$103,427	\$105,909	\$108,451	\$889,384
Irrigation Efficiency	\$2,000	\$3,000	\$5,000	\$7,000	\$9,000	\$9,000	\$9,000	\$9,000	\$10,000	\$10,000	\$73,000
Increase Community-wide Waste Diversion	\$139,976	\$244,842	\$347,561	\$451,427	\$554,734	\$554,734	\$554,734	\$554,734	\$554,734	\$554,734	\$4,512,210
Green Purchasing Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1
Composting Feasibility Assessment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bikeshare	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Build-out Bicycle and Pedestrian Infrastructure	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Develop a Vulnerability / Adaptation Assessment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Dune Protection Plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Low Impact Development Standards	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Integrate Sustainability into Employee Training and Increase Employee Participation	\$3,000	\$3,000	\$3,100	\$3,200	\$3,300	\$3,300	\$3,400	\$3,500	\$3,600	\$3,700	\$33,100
Communications Plan	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Develop Green Event Policies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Utility Management System	\$9,389	\$9,614	\$9,845	\$10,081	\$10,323	\$10,571	\$10,824	\$11,084	\$11,350	\$11,622	\$104,703
Revolving Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Complete a GHG Inventory and Set Reduction Targets	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
STAR Communities Certification	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$224,989	\$477,041	\$711,004	\$833,796	\$960,079	\$996,779	\$1,006,736	\$1,014,956	\$1,015,242	\$1,019,698	\$8,260,320