Sunrise Sustainability Action Plan

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***Sustainability**: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."*
- Bruntland Report for the World Commission on Environmental and Sustainable Development (1992)[i]

Acknowledgements

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Sunrise City Commission
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Lawrence A. Sofield – Commissioner

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1) BAU: Business-as-usual scenario
2) BCPA: Broward County Property Appraisers office
3) C&D: Commercial Construction and Demolition Waste
4) CNG: Compressed Natural Gas
5) EAR: Comprehensive Plan Evaluation and Appraisal Report
6) EPA: Environmental Protection Agency
7) FEMA: Federal Emergency Management Agency
8) FGDL: Florida Geographic Data Library
9) FPL: Florida Power and Light
10) GGE: Gaseous Gallons Equivalent
11) GHG: Greenhouse Gases
12) GIS: Geographic Information System
13) HHW: Household Hazardous Waste
14) ICLEI: Local Governments for Sustainability
15) LED: Light-Emitting Diode
16) LGOP: Local Government Operations
17) MMBTU: Million British Thermal Units
18) MSW: Municipal Solid Waste
19) $MTCO_2e$: Metric Tons of Carbon Dioxide Equivalent
20) NOAA: National Oceanic and Atmospheric Administration
21) PACE: Property Assessed Clean Energy program
22) RCAP: Regional Climate Action Plan
23) ROI: Return on Investment analysis
24) SAB: Sustainability Advisory Board
25) SAP: Sunrise Sustainability Action Plan
26) SFHA: Special Flood Hazard Areas
27) SFWMD: South Florida Water Management District
28) SROI: Sustainable Return on Investment
29) STAR: Sustainability Tools for Assessing and Rating communities
30) USGS: United States Geological Survey
31) VA: Vulnerability Analysis

Sunrise Sustainability Action Plan

Executive Summary:

The City of Sunrise ("Sunrise" or "City") Sustainability Action Plan ("SAP") provides guiding principles and recommendations for Sunrise to proactively increase resiliency and improve the sustainability of the City across its departments and within the community.

Part I of the SAP includes Sunrise's history, general information regarding City operations, and past sustainability efforts. This information depicts where Sunrise is today and is helpful for identifying opportunities for future growth and implementation of sustainability initiatives.

Part II of the SAP discusses the need for a Sustainability Action Plan and background information about sustainability, resiliency, and climate shocks and stressors the City is likely to experience in the future. It also includes an overview of the regional climate efforts pursued by the Southeast Florida Regional Climate Compact, which is a collaboration comprised of Palm Beach, Broward, Miami Dade and Monroe counties. This part of the document discusses the uncertainty surrounding future ecological conditions and conveys the need for proactive resiliency planning.

Part III of the SAP is divided into three (3) Focus Areas: **Resource Management**, **Vulnerability**, and **Sustainability**. The information provided in Part III of the SAP is intended to serve as a "blueprint" for sustainability initiatives and to provide a mechanism for Sunrise to measure performance and progress over time.

Part III of the SAP provides:

- Guidance on how to implement the Goals and Recommendations for each of the three (3) SAP Focus Areas,
- An introduction to the Greenhouse Gas Reduction Targets for Municipal Operations,
- The return on investment of eight (8) potential capital improvement projects,
- The sustainability return on investment (SROI) or triple bottom line analysis of three (3) of the eight (8) proposed capital improvement projects, and
- An overview of the SAP community outreach efforts.

The consultant team ("the Team") assisting Sunrise in the preparation of the SAP started with collecting extensive data from Sunrise facilities, operations, and management. Next, data was collected from external sources, including but not limited to: the Federal Emergency Management Agency ("FEMA"), the South Florida Water Management District ("SFWMD"), Broward County, and the National Oceanic and Atmospheric Administration ("NOAA"). Data was further analyzed to determine future conditions likely to occur in the City due to climate change and how the City uses its energy resources.

SAP Focus Areas:

1. Resource Management:

a. Greenhouse Gas Inventory

As part of the resource management analysis, the Team prepared a Greenhouse Gas ("GHG") Inventory to allow decision-makers to characterize Sunrise's use of energy resources and to understand Sunrise's contribution to GHG emissions changing the climate. The GHG Inventory includes an analysis of city-wide ("Community") emissions and Local Government Operations ("LGOP") emissions sources. The LGOP Inventory is considered a subset of the Community inventory. The GHG Inventories provide a 2016 baseline against which future emissions can be measured.

b. Greenhouse Gas Forecast

The Team also prepared a GHG forecast to project changes in emissions over time to 2030. The projection estimates how factors such as population growth, energy use, water use, and transportation demands may affect emissions under a business-as-usual ("BAU") scenario. A BAU scenario assumes no policy or technological changes are put in place to affect the GHG baseline outcomes. By comparing the BAU forecast with the baseline, Sunrise can evaluate the benefits of investments to reduce emissions. The BAU forecast occurs over a 15-year duration beginning with the 2016 baseline year for both Community and LGOP GHGs. The forecast projects a 12% increase in both Community and LGOP emissions through the year 2030 without any projects or policy changes.

c. Resource Management Baseline

Establishing a Resource Baseline Assessment for key areas of resource use (such as energy, fuel, water and waste) is crucial to identify opportunities, quantify progress, and assess future opportunities to reduce resource use throughout the community. Baselines of Sunrise's electricity use, natural gas use, water use, fleet energy use, and waste management use were developed using 2014, 2015, and 2016 data (where available). The Resource Baseline Assessment characterizes the City's resource use and originating sources of GHGs that result as a consequence.

d. Greenhouse Gas Reduction Targets for Municipal Operations

As part of the Sunrise SAP, the City adopted a Municipal Operations GHG Reduction Target. The act of setting a GHG emissions goal is commonplace among cities across the globe. Setting the Municipal GHG Reduction Target is the first step towards continued monitoring and tracking of Sunrise GHGs. The Sunrise SAP GHG Inventory, GHG Forecast, and Municipal Operations GHG Reduction Target, can be used as a snapshot-in-time to measure success moving forward with energy reductions both in scope and cost savings that result from projects that reduce emissions.

e. Capital Projects

The Team created a portfolio of projects to enhance the sustainability of City operations. These projects can form the nucleus of a sustainability portfolio that may be developed, implemented, managed, and expanded over time. The Team worked with City staff to select eight (8) projects for a return on investment ("ROI") analysis (**Appendix F** SAP Capital Project Recommendation Memorandum), and an additional analysis of three (3) projects to determine their sustainable return on investment ("SROI") in the SROI Analysis (**Appendix G**).

SROI focuses on sustainable co-benefits of a project as opposed to just the economic benefits. The SROI monetizes the net social and environmental benefits of these projects to provide a true triple bottom line analysis. These projects have been analyzed to determine the cost-benefit of implementation as well as contributions towards meeting the City's overall GHG reduction goals. The City was also provided with additional detail about other potential future projects that align with City priorities which may be implemented in the years to come based on further analysis.

The eight (8) selected projects for the ROI analysis include:

1. **Existing Building Commissioning,**
2. **Convert Street / Exterior Lighting to LED,**
3. **Install Solar Photovoltaic Systems,**
4. **Upgrade Flush/Flow Fixtures,**
5. **Utility Management System,**
6. **Procure Electric Vehicles and Infrastructure,**
7. **Solar Thermal Systems, and**
8. **Increase Fuel Economy.**

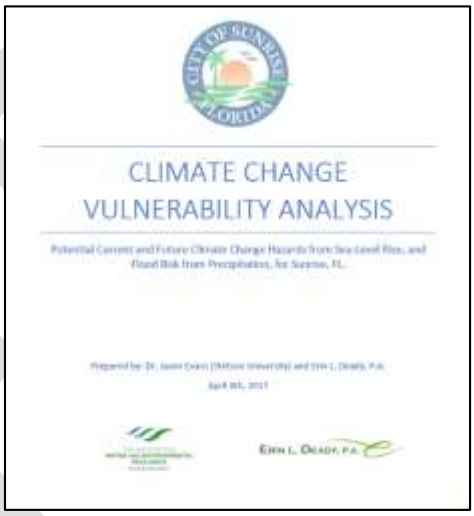
The three (3) selected projects for the SROI Analysis include:

1. **Existing Building Commissioning,**
2. **Solar Photovoltaic (PV) Systems, and**
3. **Solar Thermal System: Hot Water Supply**

2. Vulnerability:

The Team created a Vulnerability Analysis ("VA") which is an analysis of Sunrise infrastructure and key facilities and their ability to withstand potential current and future climate change hazards related to sea-level rise, flood risks from precipitation, and other changing, but expected, future conditions. The VA provides high-level analysis and literature-based review of current and future flooding risk and precipitation vulnerability within Sunrise and provides recommendations to reduce exposure and impact.

Existing datasets pertaining to municipal assets, critical facilities, roads, stormwater infrastructure, FEMA flood maps, and sea-level rise projections were used with various geo-spatial tools for the purpose of identifying specific flood vulnerabilities within Sunrise.


CLIMATE CHANGE
VULNERABILITY ANALYSIS

The findings and recommendations in the VA provide a limited discussion of potential risks associated with climate change and strategies for addressing vulnerabilities, such as, further data collection and mechanisms to pinpoint risks identified in the VA. To review the full VA in detail, please see **Appendix B**.

3. Sustainability:

The STAR Community Rating System™ ("STAR") is utilized across the nation by local governments to assess overall community sustainability. STAR is a tool for identifying the best practices for creating a sustainable and resilient community. STAR measures economic, environmental, and social factors, within a local government to determine where progress has been made and where there are opportunities to become a more sustainable community. STAR is a highly effective platform to measure performance, steer progress, and develop sustainability strategies due to the wide scope of issues it evaluates.

STAR gives local governments the ability to assess current sustainability initiatives and set a baseline for future goals. STAR utilizes quantitative and qualitative evaluation criteria to track multiple targets over time. For the Sunrise SAP, STAR was utilized to assess the overall sustainability of the City using its preliminary assessment tools. Based on existing practices and policies of Sunrise, the City could receive a three (3) star rating if it sought official STAR certification.

Implementation of the SAP

The SAP includes eighteen (18) Goals and ninety-four (94) Recommendations broken down within the three (3) SAP Focus Areas. The implementation strategy of the SAP identifies goals supported by individual recommendations. Many of the SAP Goals and Recommendations can be implemented through the City's Comprehensive Plan, Code of Ordinance or some type of general City policy initiative. Implementation can occur through existing policy or the development of new policy.

SAP Goal and Recommendation Breakdown:

- **Resource Management**: 5 Goals and 26 Recommendations
  - **Page 64** of the SAP, Part III, Section C, Subsection i, Subsubsection h.
- **Sustainability**: 9 Goals and 53 Recommendations
  - **Page 73** of the SAP, Part III, Section C, Subsection ii, Subsubsection c.
- **Vulnerability**: 4 Goals and 15 Recommendations
  - **Page 81** of the SAP, Part III Section C, Subsection iii, Subsubsection d.

The objective of the implementation strategy is to provide a "blueprint" for Sunrise with paths to ensure each goal can be achieved over time. The strategies are prioritized into a 5-year work plan so that there is an order to achieve the desired outcomes. It should be noted that some recommendations will require additional staffing or development of staff expertise for more effective implementation.

SAP Outreach Efforts

The SAP process included both internal and external briefings to keep staff apprised of the on-going efforts, and also, to build public support for the Sunrise SAP. The already existing SAB and Bicycle & Pedestrian Advisory Board provided additional input and recommendations that align with the extensive data collection efforts of the SAP planning process. Two (2) public meetings were held to provide information to Sunrise residents and gain feedback. An online public electronic survey, the *Sunrise Sustainability Survey*, was used to engage the public. It was held open for two (2) months and collected around one hundred and seventy (170) responses. A shortened version of the online electronic *Sunrise Sustainability Survey* was distributed at the City's Earth Day event resulting in another one hundred and fifty (150) responses. The surveys had the dual benefit of educating participants about the City's efforts as well as gaining input about ideas and priorities. The SAP outreach effort also included a presentation to the Greater Sunrise Chamber of Commerce and a targeted meeting for Sunrise business stakeholders to engage the business community in the SAP planning effort.

Part I.
Introduction

Local governments play an important role in promoting sustainability for many reasons. One, because they are a contributor to climate change, and two, because they have an interest in controlling costs associated with resource use. It is true the GHG emissions produced by Sunrise are small on a national or global scale; however, proactive mitigation of GHGs and reduced reliance on fossil fuels will contribute to economic resiliency and advance the overall sustainability of Sunrise. By virtue, Sunrise's public infrastructure, stock of existing buildings, and plans for future projects, provide tremendous opportunity for sustainable development in the future which will increase City resiliency over-time. Local governments also have the opportunity to lead by example and the ability to educate residents about the importance of sustainable practices and resiliency strategies.

Implementation of sustainable development practices and sustainable policies are integrally tied to improving resiliency. Sustainability contributes to making a local government resilient. For example, identifying ways to decrease reliance on fossil fuels and transition toward renewable energy could better prepare Sunrise for future hurricanes; thus, having a power supply and increasing resiliency to storm events that cause power outages. Evidence shows local governments are responsible for many of the unsustainable trends which push the planet beyond its ecological capacities.[ii] In creating the SAP, Sunrise has joined hundreds of municipalities throughout Florida and across the country that recognize the need to mitigate GHGs attributed to resource use and prepare for the gradual, but accelerating, impacts of climate change.

The following general information about Sunrise has been provided as a foundation to understand the many opportunities to incorporate the concepts of sustainability and resiliency into City department level decision-making and policy goals for future development. The size and scope of various City Departments, divisions and staff resources are important considerations in designing an SAP. For example, certain Departments have higher water and electricity usage rates due to the nature of how they operate such as police, fire and utilities. Equipment usage has a bearing on energy needs also. A basic characterization of these activities is important for understanding where opportunities may exist for facility retrofits, equipment procurement policies, or resource management actions. Additionally, City staff and leadership will be responsible for implementation of the SAP and many of the SAP Goals and Recommendations have been crafted so that they may be easily applied or delegated to existing departments.

A. General City Information

The City of Sunrise was incorporated in 1961. The topography of Sunrise is extremely flat with only a small slope towards the coastline. Development in the region was made possible by Everglades management encompassing a significant flood control system known as the Central and South Florida ("C&SF") Project. Sunrise is supported by a system of canals and lakes situated approximately six (6) miles West of Fort Lauderdale.

Sunrise is generally bound by Commercial Boulevard to the north, the Florida Everglades to the west. The southern extent of the City limits reaches as far south as SW 14th Street and as far east as NW 58th Terrace. Sunrise has a land area of 18.2 square miles and has a population density of 5,149 people per square mile (average).[iii] Sunrise boundaries can be seen in the Sunrise Development Map on Page 16.

PHOTO: *STATE ARCHIVES OF FLORIDA*

Sunrise has grown into a sophisticated city of culture and business opportunities. The population of Sunrise (according to a 2010 survey) is 84,000.[iv] Sunrise offers residents a variety of attractive, well-maintained safe neighborhoods and continues to provide its growing population with first-class services and recreational opportunities. Sunrise is one of the principal cities located near the Miami metropolitan area within Broward County, Florida. Sunrise is adjoined by the communities of Weston, Davie, Tamarac, Lauderhill and Plantation.

i. Planning and Zoning

The Planning Division dictates short-and long- range planning functions to meet Sunrise's current and future development goals and objectives. The Planning Division oversees planning and growth management; development review; zoning and land use; and, site-related permitting and inspections.

The Planning and Zoning Board meets once a month and serves in an advisory capacity in planning and zoning matters. The Planning and Zoning Board is responsible for: reviewing proposed amendments to the Zoning Map and making recommendations concerning amendments; reviewing all site plans and making recommendations; serving as an architectural review board, reviewing architectural drawings submitted with site plans and making recommendations; and lastly, approving sign ordinance waivers.[v]

The Land Development Code (Chapter 16 of the City Code) regulates designated uses (i.e. Residential, Commercial, Industrial, etc.) and the amount or appearance of the development (i.e. intensity, density, design standards, etc.) of real property within the corporate limits of Sunrise.

There are seventeen (17) articles within the Sunrise Land Development Code addressing various aspects of land development requirements and procedures.[vi]

Sunrise's Comprehensive Plan contains "elements" that govern future land use, transportation, housing, infrastructure, conservation, recreation and open space, intergovernmental coordination, capital improvements, and public-school facilities. Municipalities and counties must update their comprehensive plan every seven (7) years following adoption of a Comprehensive Plan Evaluation and Appraisal Report ("EAR").

Elements of Sunrise's Comprehensive Plan:

A. Future Land Use
B. Transportation
C. Housing
D. Infrastructure
E. Conservation
F. Recreation and Open Space
G. Intergovernmental Coordination
H. Capital Improvements
I. Public School Facilities

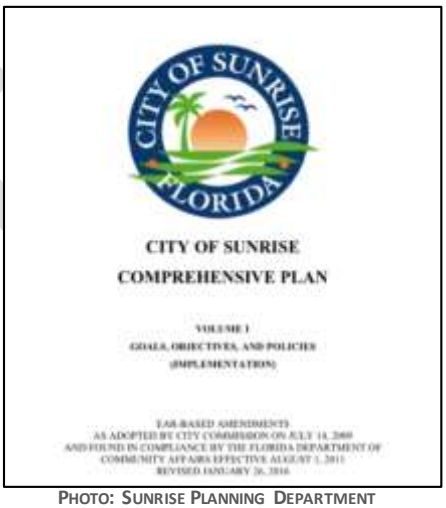


PHOTO: SUNRISE PLANNING DEPARTMENT

Sunrise land use and zoning interpretation is conducted by the Planning Division staff for all construction proposed within City boundaries. Staff members primarily assess development applications and plans for conformance to Sunrise's Land Development Code, Zoning Map, Future Land Use Map, and Comprehensive Plan.[vii]

The Sunrise Comprehensive Plan is an important implementation tool of the SAP and that relationship will be further discussed in Part III of this document. There are a number of SAP Goals and Recommendations which can be implemented through existing Goals, Objectives and Policies in the Comprehensive Plan or through consideration of future updates to it.

ii. Sunrise City Services

The Sunrise Police Department and Fire-Rescue team are highly respected departments within City operations which are necessary for the safety of the City and in responding to disaster events. These departments have unique characteristics which create opportunities for sustainable and resiliency improvements. For example, these departments are critical in emergency response situations and have employees working outside of normal business hours. Within the scope of the SAP, the operations of these departments were specifically considered in the VA, for example in relation to flood events, and have been analyzed for potential sustainability and resource management strategies, such as solar thermal retrofits on certain stations- enhancing cost-effective hot water service.

a. Police Department

The Sunrise Police Department has three hundred and one (301) professional employees. There are one hundred and ninety-one (191) sworn police officers, and ten (10) part-time sworn police officers who serve the Sunrise community. The Police Department is comprised of the Office of Police Chief and three operational divisions (Administrative Services Division, Investigations Division, and Uniform Division). The police force is housed in the Public Safety Complex on West Oakland Park Boulevard, in a five-story, 109,000-square-foot building. The Public Safety Complex is the headquarters of Sunrise's Police Department and Fire-Rescue Administration.[viii]

PHOTO: SUNRISE POLICE DEPARTMENT

b. Fire-Rescue Team

There are one hundred and sixty-seven (167) highly trained men and women on the Sunrise Fire-Rescue team. Sunrise has five (5) fire-rescue facilities housing five (5) paramedical rescue units, five (5) advanced life support suppression units, and one (1) Emergency Medical Supervisor, and one (1) Shift Commander. The operational personnel respond to over 15,000 emergency calls each year. In addition, Sunrise Fire-Rescue has one of only four (4) special operations team within Broward County, responding to specialized emergency calls involving hazardous materials, technical rescues, and dive rescue related incidents.[ix]

PHOTO: SUNRISE FIRE DEPARTMENT

iii. Sunrise City Commission, Boards, and Advisory Committees

Sunrise leadership is organized under a commission/manager form of government. The Commission is led by Mayor Michael J. Ryan and four City Commissioners (Mark A. Douglas, Neil C. Kerch, Joseph A. Scuotto, and Lawrence A. Sofield). The Commission-appointed City Manager oversees the day-to-day operations of Sunrise. The current Sunrise City Manager is Richard Salamon, and there are also two assistant City Managers, Mark Lubelski and Emilie Smith. The Sunrise City Commission is charged with setting policy, establishing laws, and adopting the City budget. City Commission meetings are traditionally conducted on the second and fourth Tuesday of each month at Sunrise City Hall.

PHOTO: CITY OF SUNRISE

Sunrise maintains fourteen (14) advisory boards comprised of members appointed by the Sunrise Commission. Sunrise advisory boards include: the Affordable Housing Advisory Board, Bicycle & Pedestrian Advisory Board, Board of Adjustment, Cultural Affairs Advisory Board, Planning and Zoning Board, Economic Development Advisory Board, Education Advisory Board, Sustainability Advisory Board, Historical Commission, Leisure Services Advisory Board, Small Business Advisory Board, Social Services Advisory Board, Unsafe Structures Board, and Veterans Advisory Board.[x]

Throughout the development of the SAP, the Team consulted with city staff members, the Bicycle & Pedestrian Advisory Board, and the SAB. These advisory boards also provide an opportunity to assist in implementing certain Goals or Recommendations in the SAP. A more detailed description of outreach involving City staff and the SAB is provided in Part III, Section D.

iv. Schools

Sunrise has eleven (11) public schools. Eight (8) elementary schools, two (2) middle schools, and one (1) high school within the City operated by Broward County Public Schools. There are also three (3) private schools and two (2) charter schools. Located within the City's Corporate Park is the University of Florida's Master of Business Administration Sunrise Center. Just outside Sunrise, there are near top-rated institutions of higher learning, including Nova Southeastern University and Florida Atlantic University. In addition, the campuses of Florida International University, the University of Miami, and St. Thomas University are a short commute from Sunrise.[xi]

Established 1915
BROWARD
County Public Schools

PHOTO: BROWARD COUNTY PUBLIC SCHOOLS

Many of the SAP Goals and Recommendations, particularly those for Resource Management and Sustainability, provided in Part III, Section C, could be applied to and incorporated by Sunrise schools. There is enormous opportunity in educating Sunrise youth about sustainability and resiliency and a number of the SAP Goals and Recommendations involve an education component intended to be inclusive of young Sunrise residents. For instance, partnerships could

be established through outreach activities with the Broward Public Schools Environmental Stewardship program for sustainability related events or initiatives.

v. Stormwater Management

Sunrise has a Stormwater Management System that diverts stormwater from impervious surfaces to areas where it can be absorbed and treated by the soil and native vegetation using a traditional storm sewer system. Sunrise's stormwater infrastructure treatment includes neighborhood swales, ponds, lakes, and canals. Sunrise utilizes revenue generated by the stormwater utility to maintain and improve the stormwater management system to serve existing and proposed developments.

PHOTO: SUNRISE UTILITIES DEPARTMENT

Sunrise has a stormwater management program requiring on-site stormwater management systems for new development to ensure that stormwater runoff will not exceed pre- development conditions. Sunrise requires pretreatment of stormwater runoff through use of development and design standards to avoid direct discharge into surface waters. The surface water quality of the canals is monitored by Broward County. The primary canal system is managed by the South Florida Water Management District ("SFWMD").[xii]

Being that Sunrise is an inland community, City vulnerability in the context of flooding, sea-level-rise, and high-volume precipitation events, is largely influenced by the maintenance and capacity of the City's stormwater management systems. In Part III, Section ii, the Vulnerability Focus Area highlights the findings of the City-wide VA. The VA approach involved a characterization of Sunrise's stormwater relationship to the regional system and a status check for each stormwater basin critical to Sunrise drainage.

vi. Sunrise Utilities

Sunrise's Utilities Department services areas outside the immediate Sunrise boundaries including the residents of Sunrise, Weston, Southwest Ranches, and parts of the Town of Davie. The Sunrise Utilities Department operates a water and wastewater system that spans approximately seventy (70) square miles and serves more than 215,000 residential and commercial customers. The Utilities Department updates its facilities and infrastructure according to the five-year Capital Improvement Program. The purpose of the Capital Improvement Program is to identify the need for new projects and to understand the necessary funding required to meet needs within the utility service area. Sunrise does not have its own electric utility; electricity in Sunrise is provided by Florida Power and Light.[xiii]

In Part III, Section i, the Resource Management Focus Area of the SAP involves a baseline assessment for resource use (electricity, natural gas, water, fleet, and waste) by Community-wide and City operations. The Resource Baseline Assessment captures the resources used by the Sunrise Utilities department and should be used as a tool to improve and monitor resource use.

a. Water Supply

Sunrise's water supply is obtained from groundwater wells that withdraw from the Biscayne or Floridan Aquifers. The water is treated utilizing processes such as lime softening, membrane treatment (Nano-filtration and Reverse Osmosis), chlorination, and fluoridation. The water supply is routinely monitored for compliance with the United States Environmental Protection Agency's ("EPA") Safe Drinking Water Act and other water quality standards.

The City has a Water Conservation Plan contained within its Consumptive Water Use Permit, which provides the follow requirements:

- Limitation of Lawn and Ornamental Irrigation Hours,
- Use of Xeriscape Principles,
- Requirement of Ultra-low Volume Plumbing for New Construction,
- Adoption of Water Conservation Based Rate Structure
- Leak Detection Programs
- Rain Sensor Devices Requirements
- Water Conservation Public Education Program
- Analysis of the Economic, Environmental and Technical Feasibility of making reclaimed water available,
- Schedule for Implementation of Mandatory Elements, and
- Emergency Interconnects.[xiv]

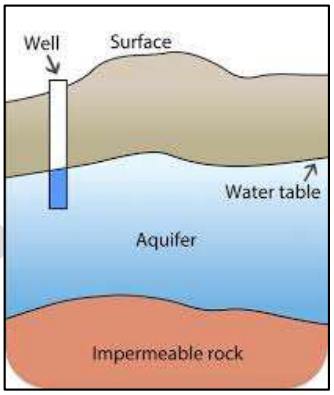


PHOTO: LUMEN LEARNING

The City also participates in other various water conservation initiatives including the Broward County Conservation Pays rebate program and Nature scape which are discussed in Part I, Section B, Subsection iii.

b. Water and Wastewater

The Sunrise Utilities Department water and wastewater system consists of over seven hundred seventy (770) miles of water distribution mains, four (4) Biscayne aquifer wellfields and one (1) Floridan aquifer well, three (3) water treatment facilities, three (3) water re-pump facilities, over five hundred (500) miles of sewer piping and mains, two hundred and fifteen (215) wastewater lift stations, three (3) wastewater treatment plants, and five (5) effluent deep injection wells.

c. Natural Gas

The Utilities Department also oversees the sixth largest municipal gas system in Florida, serving nearly 10,000 homes and businesses. The Sunrise Gas System, the only city-owned gas utility operating in South Florida, is committed to providing safe and reliable natural gas service to those located in Sunrise, Tamarac, Lauderhill and Weston. The Sunrise Energy Conservation Program assists homeowners doing their part in conserving Florida's energy resources and using cleaner energy sources by providing rebates to switch from electric appliances or replace existing older

natural gas appliances with new energy efficient natural gas appliances. Sunrise Gas delivers to thousands of homes, businesses, and government agencies through a network of underground pipelines with the commitment to maintaining the highest safety standards.

PHOTO: CITY OF SUNRISE

vii. Parks and Recreation

Sunrise is defined by its quality-of-life facilities and wide variety of recreational opportunities. Sunrise has award-winning recreation facilities, including Sawgrass Sanctuary, a twenty (20) acre park; and the environmentally-themed Cypress Preserve and Oak Hammock parks. Sunrise currently operates fifteen (15) municipal green spaces totaling approximately two hundred and fifty (250) acres, and is the home of Broward County's Markham Park, which adds more than five hundred (500) acres.

The City also offers a wide range of recreation facilities, including five public pools, two indoor gymnasiums, four meeting halls, an athletic club, and two exceptional privately-managed facilities: the Sunrise Tennis Club, and The Bridges at Springtree Golf Club, a nine-hole executive course. From small neighborhood parks to large facilities, Sunrise residents have many options when it comes to recreation.[xvi]

It's important to note that Sunrise is currently expanding its recreation amenities, with $65 million in funding provided through a voter-approved general obligation bond referendum. These enhancements will positively impact neighborhoods citywide, and include the construction of new parks and recreation centers; the renovation and expansion of several facilities; and the addition of such quality-of-life amenities as bike lanes.

The Department of Leisure Services is responsible for planning, creating, promoting, organizing and administering quality recreational, social and transportation services by keeping the public informed of services and programs available to them. Sunrise offers a wide variety of programs

designed to encourage involvement in youth sports – including recreational and competitive leagues for baseball/softball, basketball, soccer, flag football, and swimming. The City also provides programs for adults and seniors, including yoga, Zumba, pickleball, volleyball, basketball, and aquatics.

The City operates the Sunrise Civic Center complex which features a three hundred-seat theater, an amphitheater, and an art gallery. These venues host a range of cultural offerings, including stage shows, concerts, performing arts classes, and art exhibits. The City holds over thirty-five (35) special events at various parks and facilities throughout the City. All are family friendly and one, "Woofstock" is held for our four-legged friends! The events vary from outdoor movies, chess tournaments, seasonal festivals to a car show, anime fest, and Earth Day celebration to name a few. Earth Day engages the public in environmental educational opportunities and connects them with resources to live a greener life.

The nearby Sunrise Senior Center is a hub for active adults, and offers classes, lectures, trips, and special events that promote learning, engagement, and good health. Recreation is an important part of the quality of life for Sunrise residents. The maintenance of Sunrise parks contributes to the municipal water and irrigation use detailed in the Resource Management Baseline Assessment section. In order to off-set the City water use, Sunrise participates in Naturescape program which provides funding for low-volume irrigation in City parks and medians.

PHOTO: CBS SPORTS

viii. Business Landscape

Sunrise has a business-supportive attitude and more than two hundred (200) corporations have selected Sunrise as their home. The local economy continues to expand as new stakeholders invest in the area. Sunrise harmonizes its corporate and hometown identities offering a wide range of amenities to business owners and residents.

Sunrise attracts more than thirty million national and international visitors each year due to first-class shopping and entertainment options. One of Sunrise's greatest attractions is the famed BB&T Center. The BB&T Center opened in 1998 and serves as the home to the NHL's Florida Panthers hockey team. The BB&T center hosts more than two hundred (200) top entertainment and sports events a year. Annual events at the BB&T Center include youth hockey games, college and high school commencement ceremonies, corporate functions, charity events, motivational seminars and much more.[xv]

Located within Sunrise is Sawgrass Mills, acclaimed as the tenth-largest mall in the U.S., the largest single-story shopping center in the world, and the largest value retail shopping mall in the world. It opened in 1990 and has been expanded four times. The Oasis at Sawgrass Mills is a premiere destination, day or night with 330,000 square feet of entertainment, dining and a Regal Cinema.

Currently underway is the master planned development known as Metropica, a $1.5 billion project. The development will include four million square feet of commercial space, retail shopping, entertainment facilities, class A office space, public spaces dedicated to the arts, 2,250 residential living units and a boutique luxury hotel.

PHOTO: BROWARD PALM BEACH NEW TIMES

Sunrise also includes the largest corporate office park in South Florida, the Sawgrass International Corporate Park. Other office parks in Sunrise include: Sawgrass Technology Park, Sunrise Commerce Park, and Broward Lakes Business Park. Due to the wealth of commercial space, Sunrise has attracted major companies to locate within its boundaries such as American Express Regional HQ, HBO Latin America, New York Life, Pet Supermarket HQ, Ikea, Harley Davidson, and Cigna.

The business community will play a large part in SAP implementation. In Part III, the Resource Management Focus Area contains analyses which consider the impact of the business community in regard to GHG emissions, energy, water, and waste – which are a large part of community-wide impacts. As part of the SAP outreach effort, the Team held a targeted business stakeholder meeting to involve large firm businesses in the SAP planning effort. A number of SAP Goals and Recommendations are targeted directly at the business community which will necessitate continued and enhanced conversations with the business community.

B. Past Sustainability Efforts of Sunrise

The SAP is not Sunrise's first effort to include sustainability in the organizational environment of the City, there are a number of programs and initiatives which are presently guiding the expansion of Sunrise. There are also sustainable aspects incorporated in many current and upcoming capital improvement projects. For example, the new Cypress Preserve Park and Oak Hammock Park, both have been designed with sustainability features such as solar lighting and recycled materials. Sunrise also received an Energy Efficiency Community Block Grant in 2009 to lower energy consumption, with the funds used to purchase and distribute fluorescent bulbs to Sunrise residents and to replace inefficient parking lot lights with ultra-high efficiency LED light fixtures at various City facilities. The City has also had professional sustainability staff working to develop and build a new sustainability program for the City. The SAP will assist in providing a blue print for future efforts.

i. U.S. Climate Compact

PHOTO: CLIMATE MAYORS

Sunrise is committed to reducing GHGs and supporting efforts for federal and global-level sustainability policy making. Mayor Ryan is one of four hundred and-two (402) U.S. mayors who has committed to adopt, honor, and uphold the Paris Climate Agreement Goals through the Mayors National Climate Action Agenda. The initiative represents collective action towards intensifying efforts to meet the 1.5 degrees Celsius target and to create a 21st century clean energy economy, both of which are key initiatives in the Paris Climate Agreement.[xvi]

ii. Sunrise Sustainability Advisory Board ("SAB")

The SAB was a natural outgrowth from the Economic Resiliency Advisory Board, created by the Sunrise Commission in 2010. The goal of the SAB is to ensure Sunrise remains a healthy, vibrant, and resilient community for current and future generations to live, work, and play. The SAB promotes sustainably engineered systems that protect human well-being and are also compatible with sustaining the natural environment.

The SAB is focused on achieving environmentally sound policies for the community, advising Sunrise staff on new developments related to conservation, recycling, renewable energy sources, and recommending Sunrise building code changes that will encourage developers, residents, and investors to construct environmentally sustainable projects. The SAB meets on the second Wednesday of each month at 6:00 pm, the meetings are open to the public and resident input is welcome. The SAB also recommends information for Sunrise's sponsored web page. The webpage is titled "*Good and Green*," and is a platform to educate residents and business owners on best practices in regard to sustainability, conservation, and recycling.

iii. Good and Green

The Sunrise *Good and Green* webpage is currently a hub for information on sustainability, conservation, and recycling programs in Sunrise. The *Good and Green* program is designed to encourage residents, institutions, schools, and businesses to practice environmental sustainability in the community. Residents can take advantage of Sunrise's programs advertised on the *Good and Green* webpage: http://sunrisefl.gov/index.aspx?page=601.

The *Good and Green* programs include, but are not limited to:

- Conservation Pays (Sunrise Utility customers can receive free low-flow kitchen and bathroom faucet aerators and shower heads, or receive a $100 rebate for replacing old toilets);[xvii]
- NatureScape Broward (citizens can certify through the National Wildlife Federation and/or have their landscape recognized by the Florida Yards & Neighbors program);[xviii]
- The Weatherization Assistance Program (a program available to community action agencies, local governments, non-profit agencies, and Indian tribes to facilitate energy savings repairs to low-income homes, these improvements include insulation, weather stripping, reduction of air infiltration, and water heater wraps);[xix]
- PACE Broward (a program allowing residential and commercial property owners to utilize Property Assessed Clean Energy financing, which allows repayment through property taxes. Up-front financing is available for energy efficiency, renewable energy, and wind resistance home improvement projects);[xx]
- Recycling waste, reusing items, and donating usable goods to charity;
- Adopt a Street (a program for businesses and citizen groups who want to demonstrate their commitment to the community by picking up litter at least four (4) times per year over a two-year period);
- Butterfly Hero (a program encouraging citizens to utilize a butterfly friendly landscape);

- Memory Tree Program (an opportunity to memorialize a special life event or person by planting a tree in a Sunrise park, a minimum donation of $100 is required, a tree valued at $100 will be planted in a Sunrise park with a commemorative nameplate, donors who make a larger contribution will receive a larger tree);[xxi] and,
- Allowing citizens to safely dispose of household hazardous waste and electric waste at Sunrise collection events.[xxii]

The SAB also created the "Good and Green Pledge" to inspire citizens to incorporate sustainable practices into their everyday routine. The Good and Green Pledge is for dedicated residents who are committed to conserving resources and reducing waste; supporting a sustainable economy; and practicing stewardship. Once citizens have taken the pledge they can become a "Good and Green Ambassador" by distributing useful information to their neighbors, at their work place, or school.

As part of the SAP planning effort, the Team consulted with the SAB and public outreach events were promoted via the Good and Green web page. A detailed description of SAP outreach efforts is provided in Part III, Section D. By implementing the SAP, Sunrise is using a mechanism designed to bring its previous and new sustainability initiatives (and projects) under one cohesive "umbrella" planning effort to building on previous momentum. Concurrently, Sunrise will be inherently furthering the goals and initiatives of the Mayors National Climate Action Agenda.

Part. II

A. Why Develop a Sustainability Action Plan?

The Sunrise SAP is the culmination of a one (1) year planning process and includes strategies, policies, and tools Sunrise may use to create and implement sustainable initiatives, reduce GHGs and resource use, increase energy and water conservation, and strengthen the overall resilience of Sunrise to vulnerabilities. This document is intended to guide Sunrise leadership in developing strategies to enhance the current quality of life in Sunrise and prepare for future conditions.

Sunrise SAP Focus Areas: **Resource Management**, **Vulnerability**, and **Sustainability**.

Incorporating the concepts of sustainability and resiliency into local city planning is vital for protecting existing Sunrise facilities and roads, planning the future success of Sunrise capital improvement projects, and preparing for climate change impacts. Sunrise decision makers should consider SAP strategies in constructing, operating, and maintaining the economic, social and environmental infrastructure of the City, and in preparing future policy.

The Team worked with Sunrise staff and residents to understand where the City is today and where it would like to be in the future, regarding the three (3) SAP Focus Areas. A collaborative, integrated approach is necessary to accomplish the strategies outlined in this SAP.

Guiding Principles:

- Begin to use sustainability concepts in all levels of decision making;
- Increase Sunrise's resiliency to climate change impacts;
- Educate and share knowledge with Sunrise residents, building mutual understanding of the city's needs;
- Support the business and residential communities in becoming sustainable;
- Protect and enhance air quality, water quality, and the natural systems of Sunrise; and,
- Increase social aspects of sustainability.

i. What is Sustainability?

The concept of sustainability is defined as meeting the needs of the present without compromising the ability to meet the needs of future generations.[xxiii] "Sustainability" recognizes the link between development and the protection of the environment so that the natural resources and ecosystems supporting basic human quality of life are protected. The three pillars of sustainability are social development, economic development, and the protection of the environment. Each pillar is equally important and must be balanced, if one pillar is weak the whole approach fails.[xxiv]

The SAP recognizes that these concepts are not mutually exclusive, but in fact, intrinsically linked. A goal of the SAP is to integrate sustainability in planning and operational processes throughout Sunrise departments to ensure that current activities do not harm the environment, either now or in the future, and do not draw on more resources than are necessary.

Key sustainability concepts guiding this planning process:

- Effective integration of environmental, social, and economic considerations in Sunrise decision making.
- Gaining the essential support and involvement of the community.
- Use of the precautionary principle, where there is the threat of serious or irreversible environmental damage or degradation, it should be prevented by all means possible. The lack of full scientific certainty is not considered a valid reason for postponing viable measures that mitigate potential harm.
- Equity between and within generations, which means not only the consideration of fairness and equal access to current opportunities but such equal access for future generations.
- Recognition of the essential need for future Capital Improvement Projects and Sunrise growth but factoring in other considerations such as changing future conditions.

There are many potential benefits stemming from sustainable development and implementation of the SAP such as effective policy development; enhanced capacity to meet community needs; creation of stronger regional links; cost savings from improved efficiency, conservation and restoration of the physical environment; and, lastly the opportunity to build City resiliency to climate change.

ii. What is Resiliency?

Urban resilience is the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.[xxv] Today, cities face many challenges from a growing range of adversities. Improving resiliency translates to preparing Sunrise for challenges and helping the City adapt and prepare for the expected and the unexpected. The opposite of a resilient city is a vulnerable one.

In the face of climate change, Sunrise resiliency planning can be seen in the context of the VA which is an analysis of City drainage systems, roads, operational facilities, and assets. By incorporating climate change adaptation planning into policy decisions, Sunrise will join the 68% of cities worldwide utilizing adaptive implementation techniques.[xxvi]

"79% of cities worldwide report that in the past five years, they perceived changes in temperature, precipitation, sea level, or natural hazards that they attribute to climate change."[xxvii]

Traditional planning is dictated by past trends but improving resiliency in Sunrise requires planning to account for changes projected to take place in the future. The SAP takes a holistic approach to identifying vulnerabilities within Sunrise's systems which will strengthen policy for future development. By understanding potential shocks and stressors Sunrise can enhance its development trajectory and improve citizen's quality of life.

A **shock** is a sudden, single disaster event that may threaten a city.

A **chronic stressor** is a reoccurring pressure that weakens the internal systems of a city.

Shocks:

- Flooding
- Hazardous Material Accident
- Severe Storms
- Extreme Rainfall
- Business Disruption
- Infrastructure & Building Failure

Chronic Stressors:

- Water Scarcity
- Lack of Affordable Housing
- Poor Air Quality
- High Unemployment
- Shortage of Drinking Water

(Information Adapted from 100 Resilient Cities[xxviii])

Extreme weather patterns and the uncertainty of climate change demands resiliency planning across the United States, and especially for the State of Florida. Plans for future development must incorporate the consideration of shocks and stressors if such development is expected to withstand changing future conditions.

Sunrise can make itself more resilient to climate change and extreme weather events by integrating resiliency planning into all Sunrise department level decisions and City Commission policies. Failure to implement such planning measures today will exacerbate present stressors and the future impacts from shocks (i.e. hurricanes or high-volume rain events) that will be more difficult to address retrospectively.

Learning from other local governments across the Country is a key way that sustainability and resiliency strategies can be developed. For example, below is a case study from New Orleans, Louisiana, which demonstrates the incorporation of resiliency planning into multiple aspects of City policy describing a holistic approach that could be used for goal implementation.

Resiliency Stewardship Case Study: New Orleans, Louisiana

The City of New Orleans released its Resilience Strategy in August of 2015 and shared its One-Year Progress Update in 2016. Post hurricane Katrina (2005) and the Deepwater Horizon Oil Spill (2010), New Orleans has learned important lessons about what it takes to be a resilient city. As part of their Resilience Strategy, New Orleans is implementing urban water projects so that stormwater and groundwater can be carefully managed to align with the region's natural processes and to support economic growth. Here are three examples of on-going comprehensive and innovative urban water management actions use in New Orleans to increase the resiliency of the City:

- **Greater New Orleans Urban Water Plan**: This focused assessment addresses groundwater and stormwater in three of the City's Parishes and specifically analyses risks related to flooding caused by heavy rainfall, subsidence caused by the pumping of stormwater, and wasted water assets.
- **New Stormwater Regulations in Comprehensive Zoning Ordinance**: Revisions to the Comprehensive Zoning Ordinance now require mitigation of runoff associated with new development or reconstruction within the City. New designs must include on-site water catchment techniques to slow the surface flow of water and in effect reduce subsidence rates throughout the City.
- **Green Infrastructure Demonstration Projects**: The New Orleans Redevelopment Authority and Sewerage & Water Board of New Orleans, are building a series of green infrastructure demonstration projects throughout the City to show the public how underutilized spaces can be transformed to detain stormwater and designed to make neighborhoods more attractive. Vacant lots are converted to rain gardens that draw runoff from the street, temporarily store the water, and capturer water pollutants. Projects include green roofs, bioswales, and pervious pavement.

These projects are just a few of the actions taken by New Orleans to increase resiliency. Through comprehensive urban management, New Orleans aspires to lower infrastructure costs, reduce flood risks, temper soil subsidence, and transform unsightly infrastructure to attractive amenities.

Information adapted from: Resilient New Orleans and 100 Resilient Cities
(http://100resilientcities.org/wp-content/uploads/2017/07/Resilient_New_Orleans_Strategy.pdf)

B. Current Climate Change and Regional Impacts

The world's climate scientists are in agreement that modern human activity is contributing to the warming of the earth's overall temperature.[xxix] The "greenhouse effect" is defined by the EPA as a general warming of Earth's surfaces produced by GHGs trapped in the atmosphere.[xxx] A wide body of evidence indicates that temperature increases over the past 150 years can be attributed to anthropogenic GHG emissions, which have already resulted in substantial changes to the global climate system.[xxxi]

Climate scientists also widely agree that continued increases in GHG concentrations in the atmosphere can be expected to accelerate the rate of global warming and associated climate-related risks over the next several decades.[xxxii] GHG concentrations in the atmosphere are rising primarily because of the burning of fossil fuels. A consensus in the scientific community suggests the transition away from a fossil fuel-based economy is vital for avoiding worst-case scenarios of climate change.[xxxiii]

According to the 2016 *State of Climate* report by NOAA and the American Meteorological Society, the amount by which carbon dioxide levels have increased over the course of a year has roughly quadrupled since the 1960's, "(t)he global growth rate of atmospheric CO_2 has risen from 0.6 ± 0.1 ppm per year in the early 1960s to an average of 2.3 ± 0.6 ppm per year during the past ten years. However, the increase in global annual CO_2 from 2016-2016 was 3.5 ± 0.1 ppm (0.88% ± 0.03%), the largest annual increase observed in the 58-year atmospheric measurement record."[xxxiv] Thus, logically as the global energy demand continues to grow and be met mostly with fossil fuels it is expected that earth's average temperatures and levels of atmospheric carbon dioxide will continue to increase.[xxxv]

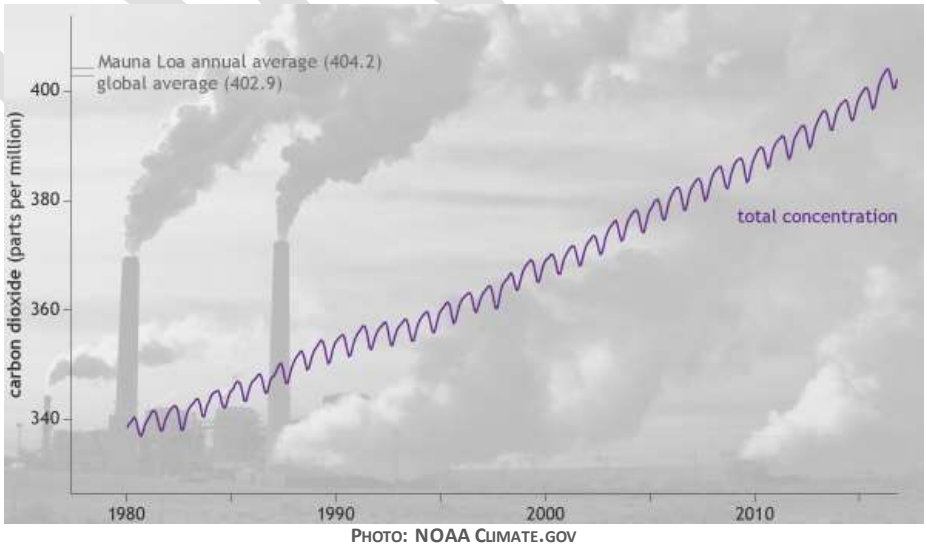


PHOTO: NOAA CLIMATE.GOV

Monthly global carbon dioxide in parts per million from 1980-2016.[xxxvi]

The forecast of climate change and its impacts have been identified by the EPA for the Southeast and Gulf Coast regions of Florida, with expected impacts including: increased coastal erosion; greater risks of flooding from sea-level rise, storm surge, and extreme precipitation events; increased disturbances (i.e. fire or insect outbreaks); higher summer heat average, and reduced winter cold stress.[xxxvii]

i. Climate Change: Sunrise Shocks and Stressors

Southeast Florida has long been recognized as a region that has acute and inherent vulnerabilities to climate-related hazards. The local climate naturally experiences wide variability in weather patterns that historically has included periods of extended drought and water shortages; periods of intense rain and associated threats of flooding; and, severe wind and storm surge flooding associated with powerful hurricane strikes.[xxxviii] Over the past hundred (100), years development in Southeast Florida has been made possible by infrastructure and engineering interventions that have made our communities largely resilient to existing climate variability, but it is widely acknowledged that accelerated climate change will require substantial adaptation of Southeast Florida's infrastructure and built environment in the next several decades and beyond.[xxxix]

a. Climate Change Stressor: Sea-level Rise

Sea-level rise is one of the most immediate and clear climate change stressors effecting communities within the Southeast Florida region. It is apparent that Sunrise, as an inland Broward County community, has much less immediate vulnerability to sea-level rise and tidal flooding as compared to most coastal areas in the Southeast Florida region. However, there are inherent features of the local and regional drainage systems that do pose concerns for long-term floodplain management in Sunrise when analyzing sea-level rise projections recommended by the Southeast Florida Regional Climate Compact (the "Compact") for municipal planning purposes (as seen in the Photo below). Simply put, being further inland does not mean Sunrise will not be impacted by climate change, or in particular, sea-level rise.

As the earth continues to warm, oceans will continue to rise. Contributors to sea-level rise include thermal expansion of sea water, ice melt from land-based sources, and an intricate network of complex feedback loops, including many not fully understood.[xl] Sea-level rise can be expected to impact local governments and citizens in Southeast Florida through increased flooding, saltwater intrusion of aquifers, economic disruption, adverse effects on stormwater drainage systems, and loss of land from inundation.

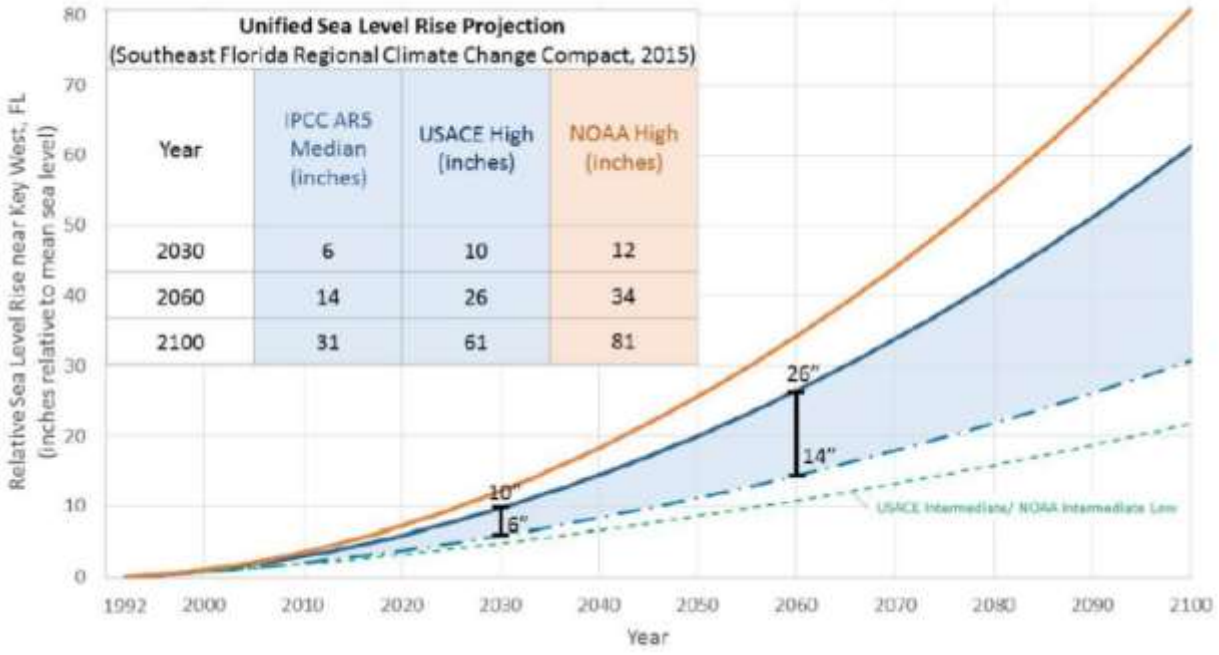


PHOTO: SOUTHEAST REGIONAL CLIMATE COMPACT UNIFIED SEA-LEVEL RISE PROJECTION

b. Climate Change Shock: Increased or Decreased Precipitation

Although there currently is not clear scientific agreement as to how global climate change will impact future precipitation patterns in Southeast Florida, there is general consensus that risk planners should anticipate periods of more extreme drought combined with an increased probability and severity of extreme rainfall events, meaning the extremes will become more visible. Climatologists agree global warming will increase the volume of rainfall ordinarily expected in South Florida during regular rain events posing new volumetric impacts to manage.

Most of Southeast Florida, including Sunrise, has a tropical monsoonal climate that is characterized by a warm wet season (~May 15 – October 15) and a cooler dry season (~October 15 – May 15). Average annual rainfall is around fifty-seven (57) inches per year in Sunrise, with high natural variability occurring among different years. Larger climatological factors do correlate with precipitation levels in Southeast Florida. Perhaps most notably, strong El Niño cycles within the equatorial Pacific are known to have a strong influence on precipitation in Southeastern Florida, generally through an increase in precipitation during the dry season and less precipitation during the normal wet season. High levels of dry season rainfall, which are associated with strong El Niño events, can often cause regional-scale flooding in Southeast Florida. Years in which the area is affected by tropical cyclones during the wet season also tend to have higher rainfall totals. The high intensity and duration of rainfalls associated with tropical cyclones often can also induce localized to regional flooding, depending on the size of the storm.

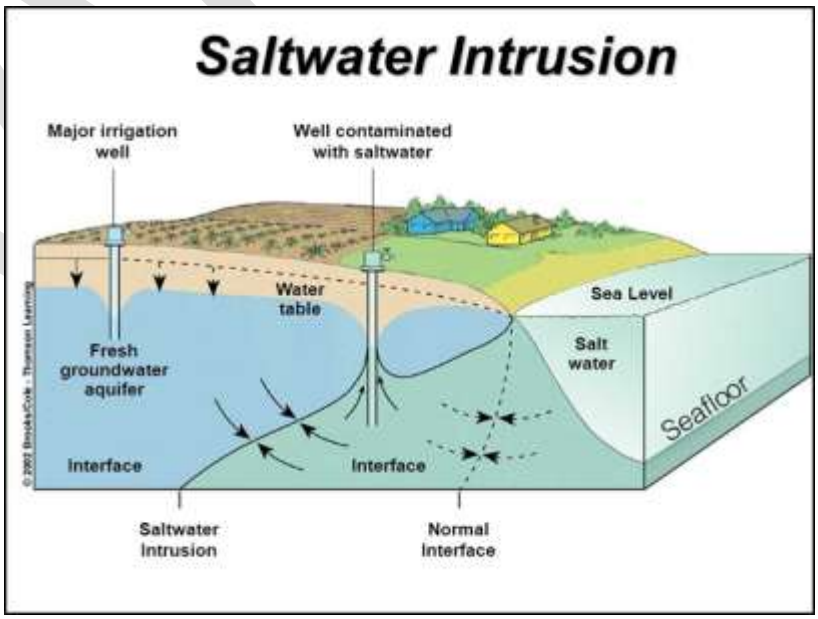
Climate change has a complex relationship with the hydrological cycle. Because the water holding capacity of air increases about 7% per 1°C warming, warmer temperatures inevitably lead to the potential for increased water vapor in the atmosphere.[xli] Increased heating, however, also results

in greater evaporation. Warmer temperatures increase evaporation and allow the atmosphere to retain more moisture. These effects create the necessary conditions for the accelerated formation of high intensity individual storm events which pose the threat of flash floods and the potential for extreme flooding events. These types of extreme events, or higher volumes of rain during precipitation events, will push stormwater management systems to assimilate higher design conditions that previously permitted. This may cause challenges to manage flooding in the future should more extreme weather conditions become the norm.

c. Climate Change Stressor: Saltwater Intrusion

A common concern for climate change and sustainability planning in Southeast Florida includes potential saltwater intrusion of aquifers. Increased demands on water supply without adequate recharge can accelerate the intrusion of saltwater into aquifers. Rising sea levels are expected to exacerbate these issues. Sunrise primarily relies on the Biscayne aquifer for its water demands. A number of previous scientific studies have focused on effects of saltwater intrusion on the Biscayne aquifer in coastal regions of Miami-Dade and Broward Counties. However, there is less research on potential effects from saltwater intrusion on well sites located within western portions of these counties, which contain wells serving Sunrise from the Biscayne Aquifer.

The coastal portions of the Biscayne aquifer are known to have substantial vulnerability to saltwater intrusion. Urbanization of the coastal area, construction of drainage canals, and development of municipal well fields have historically led to a lowering of water levels in the eastern Biscayne aquifer.[xlii] A previous study from the U.S. Geological Survey ("USGS"), already has found that chloride concentrations in groundwater wellfields in Broward County were moving west in 1980 to 1989 in response to lowered regional water levels, where this western expansion could prove problematic for managing future supplies.[xliii]



A 2014 report by Prinos et al., in Miami-Dade County indicated that westward expansion of the saltwater interface in the Biscayne aquifer is continuing, especially along the drainage canal corridors. [xliv] Modeling by Langevin and Zygerneski, completed in 2013, at wellfields in Broward County near Pompano Beach shows that ongoing sea-level rise can be expected to further intensify saltwater intrusion threats within the Biscayne aquifer, particularly along the coastal reaches.[xlv]

Coastal areas east of Sunrise exhibited the strongest degree of change in modeled increased water table heights from a preliminary study on Broward County groundwater levels for years 2060-2069.[xlvi] The results indicate that increased sea-level rise will affect water table heights from dense saltwater settling below the fresh groundwater and subsequently pushing the lighter freshwater upwards, elevating the water table. However, model results indicated minute changes in groundwater heights for Sunrise wellfields. The westward location of Sunrise wellfields from the coast may provide a buffer to saltwater aquifer intrusion. Further monitoring and investigation of potential saltwater intrusion into Sunrise's groundwater supply is warranted given this lack of direct data, but overall the westward locations of well sites should provide a strong buffer to potential saltwater intrusion.

Broward County Resiliency Stewardship Case Study:

Broward County, is currently developing a series of stormwater maps entitled the "**Future Conditions Map Series**." The first of these maps, is a new groundwater surface map, titled "**Plate WM 2.1 – Future Conditions**." This map displays future groundwater levels with projected sea-level rise, future precipitation, and drainage capacity. Future precipitation was based on the Center for Ocean-Atmospheric Studies downscaled Community Climate System Model representing an increase of 9.1% rainfall from the base case of 1990-1999, and the sea-level rise model was based on United States Army Corps of Engineers National Research Council Curve 3, which equates 26.6 inches-33.9 inches from 1992 levels.

The map is important for addressing future flood risks and accounting for expected future conditions. The new maps are incorporated into the Climate Change Element of the Broward County Comprehensive Land Use Plan and supporting documents. In May 2017, Broward County Board of Commissioners enacted, "**Ordinance No. 2017-16**" amending "**Section 27-00 (b) (5) a.3.b of the Broward County Code of Ordinances**," the amendment requires permits regarding groundwater after June 20, 2017, to consider "**Plate WM 2.1 – Future Conditions**."

The groundwater map now must be considered for activities that alter the flow of surface water (i.e. surface water management licenses; applications for major redevelopment of existing sites; and, applications for major modifications to existing surface water management licenses). Sunrise is required to utilize the map when applying for surface water management permits and permitting new development. For example, construction of impervious surfaces, paving, grading, and drainage.

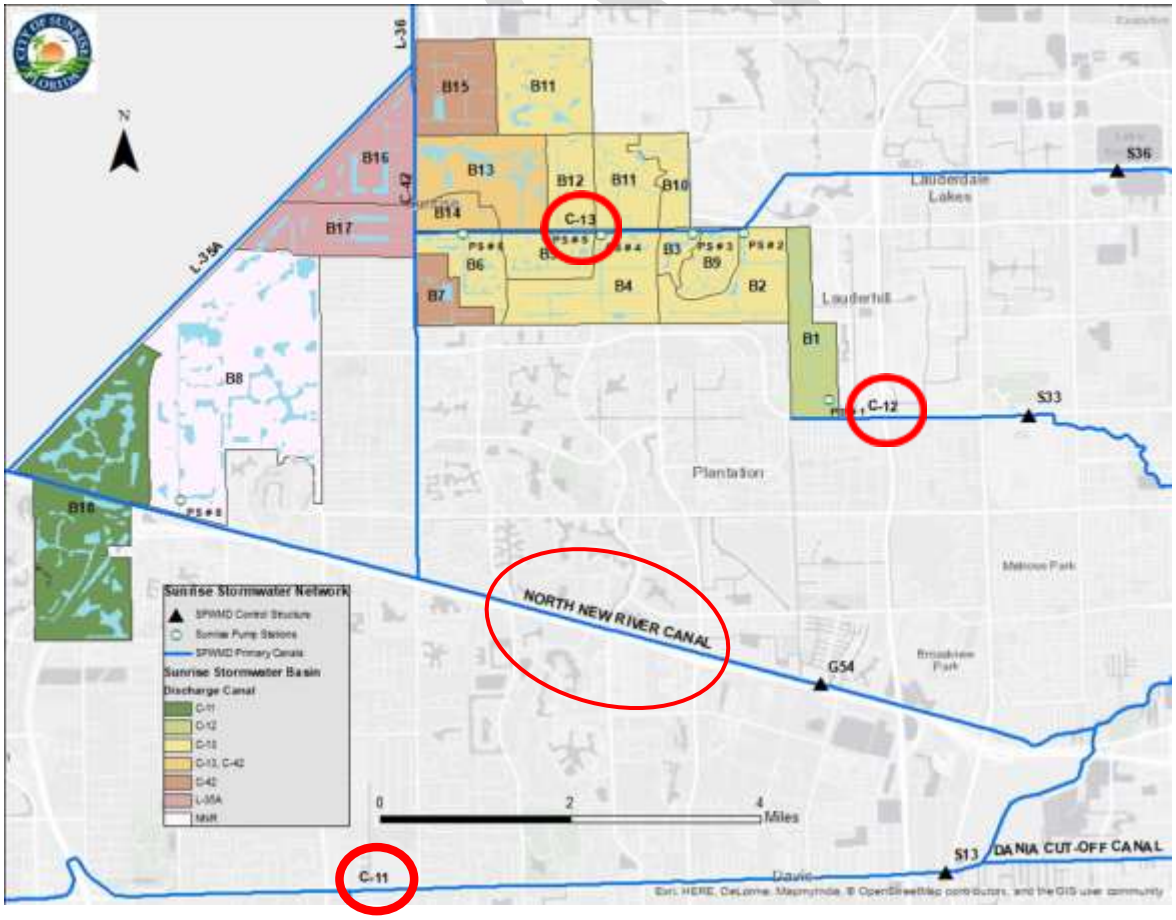
Broward County is also in the process of developing a second map, the "**Future Conditions Broward County 100-year Flood Elevation Map**." This will be an important tool representing predicted changes in surface flood elevations by integrating the new groundwater map with impacts on drainage caused by a 100-year flood event. Planning for expected future conditions is already the norm in Broward County advancing the resiliency of the region. Information Adapted from (http://www.broward.org/Environment/Engineering/Pages/GroundwaterMaps.aspx) (Plate WM 2.1 Future Conditions: http://bcgis.maps.arcgis.com/apps/View/index.html?appid=70c3f3ffc88748c28e432719ec2844c4)

ii. Climate Change Vulnerability

Climate vulnerability in South Florida is most routinely visible from tidal flooding and the continued compromise of coastal structures to manage increased sea levels. In Sunrise, this is not a direct consequence of climate change vulnerability due to its western location. However, there are direct relationships between flood control structures in Sunrise and their continued ability to function within the regional system – all of which could be compromised downstream by climate change and sea level rise impacts.

Perhaps most notably, the community's drainage system depends on primary drainage canals operated by the SFWMD and additional secondary canals mostly operated by local governments. Sunrise relies on a network of retention lakes and canals which ultimately drain into SFWMD canals: C-11, C-12, C-13, and the North New River Canal (as seen in ***Figure 1*** below). From these canals, stormwater flows east where it is carried to the sea by tidal water bodies. The low slopes within these features already pose a substantial challenge for traditional gravity-based drainage, which is augmented across Southeast Florida through a complex network of water control and pump structures. An inexorable impact of sea-level rise is a lowering of the hydrologic head difference between coastal receiving waters and inland drainage areas, thereby reducing the volumetric rate at which stormwater can be discharged through existing drainage control structures. This poses challenges to upstream systems that rely on downstream capacity.

FIGURE 1: SUNRISE STORMWATER DRAINAGE BASIN LOCATIONS AND SFWMD PRIMARY CANAL DISCHARGE DELINEATIONS



Sunrise, like most of Southeast Florida, is characterized by high groundwater tables with substantial connectivity to the surface hydrology. In upland areas of Sunrise that have pervious land covers, subsurface soils and limestone rock formations that are located above the groundwater table provide substantial amounts of stormwater storage capacity, that functionally reducing peak runoff volumes into surface water drainage systems.

It is widely expected that sea-level rise will elevate the regional groundwater table throughout much of Broward County. An elevated groundwater table would have the unavoidable effect of reducing overall groundwater storage capacity, thereby increasing the surface run off potential from given storm events. This relationship, as it pertains to Sunrise, is beyond the scope of this assessment but it is an issue for further monitoring by the City.

The combination of reduced surface water drainage rates and reduced groundwater storage capacity – both of which are already known to be occurring in Broward County – have the effect of increasing flood risks independently of any extreme rainfall event probabilities. In other words, sea-level rise can be generally expected to increase long-term flood risks in Sunrise and other inland communities throughout Southeast Florida, even under the existing range of historic rainfall patterns in which the local and regional drainage infrastructure was originally designed to function.

iii. Regional Climate Approach: Southeast Florida Regional Climate Compact

In January 2010, the Southeast Florida Regional Climate Compact (the "Compact") was formed by Broward, Miami-Dade, Monroe, and Palm Beach Counties as a mechanism for coordinating climate change mitigation, adaptation, and associated policy development across the four counties. The Compact has invested substantial time and resources in the development of technical guidance to assist with sea-level rise planning, assessments, and adaptation for Southeast Florida communities. The Compact parties committed to the development of: a regional GHG baseline assessment, regional sea-level rise projections, preliminary inundation mapping, and a Regional Climate Action Plan ("RCAP").[xlvii]

The Compact successfully developed the *Unified Sea Level Rise Projection (2015)*, which provides a consistent baseline range of sea-level rise projections that are intended "to aid in understanding of potential vulnerabilities and to provide a basis for developing risk informed adaptation strategies for the region."[xlviii] The Compact has also completed a county-wide GHG Inventory and coordinated state and federal legislative programs leading to a new Florida law known as the "Peril of Flood" legislation, which addresses sea-level rise guidance to be included in local comprehensive plan updates.

a. Sea-level Rise Projections

Southeast Florida is highly vulnerable to climate change-induced flooding, particularly due to the long-term impacts of sea-level rise and extreme precipitation. It is well-known that a number of coastal cities within Southeast Florida are already facing increases in tidal and stormwater

flooding due to the impacts of rising seas. Several of these cities have started to implement intensive adaptation measures intended to reduce these flooding impacts. Inland areas face the challenge of managing higher-volume and frequency rain events that will stress drainage and other infrastructure, addressing these challenges may require identification of at-risk facilities and similar adaptation measures. Adaptation measures can be complex and expensive; therefore, it is imperative for Southeast Florida municipalities to collectively engage in proactive and sustained efforts to improve floodplain management and infrastructure planning by assessing future hydrological conditions. Flooding and sea level-rise are regional problems, the Compact has been an important factor in regional response to both hazards.

b. RCAP v. 2.0

The RCAP is a guiding document with recommended strategies, evolving best practices, and specific actions for municipalities to use to improve their climate change resiliency.[xlix] The RCAP provides a regional agenda to guide development throughout Southeast Florida. Originally released in 2012, the RCAP included nine (9) goal areas: agriculture; energy and fuel; risk reduction and emergency management; compact coordination; public policy advocacy; sustainable communities and transportation planning; water supply; natural systems; public outreach and engagement. The RCAP was created with a five-year horizon. One of the key items within the RCAP is risk reduction and emergency management, which is used to prepare "for the inevitable shocks and stresses experienced in Southeast Florida through coordinated and interdisciplinary risk reduction and emergency planning and investment."[l]

The initial RCAP was updated in late 2017, to a RCAP version 2.0. Compact stakeholders and partners provided feedback and ideas for upgrading the regional plan. RCAP 2.0 established (3) three new goal areas: regional economic resilience; social equity; and, public health. The RCAP provides a framework for local and regional implementation of resiliency strategies, the RCAP is expected to evolve over time and function as a "living" document.[li]

c. Opportunities for Alignment

Regional collective action is the most productive way to accomplish resiliency in Southeast Florida. By taking the initiative to create and implement the SAP, Sunrise is already furthering the goals of the Compact. Many of the SAP Goals and Recommendations align with RCAP policies and strategies, which presents an opportunity for resiliency stewardship on behalf of Sunrise. The SAP Goals and Recommendation matrix provided in each SAP Focus Area has a dedicated column that identifies whether each SAP recommendation corresponds with a RCAP goal. The Compact encourages collaboration and regular information exchange. Sunrise should continue to maintain communication and increase the information exchange with the Compact, neighboring cities, the SFWMD, and Broward County to effectively build regional resilience to climate change.

Part III. Data Collected and SAP Focus Areas

The creation of the SAP was a data intensive process beginning with the collection of significant data from the City and outside sources of information. The data was used for individual analyses in each of the three (3) SAP Focus Areas. The results within each Focus Area largely contribute to the SAP Goals and Recommendations. The following analyses were critical in determining where Sunrise is today and to assess opportunities for future improvement. Data collection and reporting contributes to the sustainability story of Sunrise and will be a necessary aspect for implementation of the SAP. The individual analyses that contribute to each of the three (3) Focus Areas are as follows:

1. **Resource Management**
    - **GHG Emission Inventory**
    - **GHG Emission Forecast**
    - **Resource Baseline Assessment**
2. **Vulnerability**
    - **Sunrise VA**
3. **Sustainability**
    - **STAR Preliminary Assessment**

In general, Sunrise was able to provide most but not all requested data. Accordingly, Sunrise would benefit from a centralized database to collect and track key sustainability indicators to facilitate sustainability reporting, management of programs, and assessment of economic, environmental and social performance. Other elements of a successful data management system would include: common nomenclature; crosslinking facilities with energy, water, and waste accounts; normalizing data using factors that correlate with changes in performance; and, a system for periodic reporting from various City departments.

Given the high level of data collected for this effort, Sunrise should maintain that momentum but look for opportunities to continue improvement in data collection and management. A key element of "telling the story" of sustainability is showing how benefits will accrue, both financial and from co-benefits such as education for the community. To that end, most of the data-related issues raised in this section have been integrated into the SAP Goals and Recommendations.

A. Data Gathered & Gap Analysis

The SAP is a living document that should be updated in conjunction with the Sunrise GHG Inventory (at least every 5 years), in order to reflect actions accomplished by Sunrise, measure progress, and track changing priorities. City sustainability and resiliency planning would benefit from a newly maintained transparent directory of data driven City reports, which can be supplemented with new information flowing from the actions the City is taking in accordance with the SAP.

This data collection effort can provide support for future projects and policies to increase sustainability and resiliency throughout Sunrise. The Sunrise community must trust the information gathered and used as basis for the City's evolving pursuits or such efforts will be met with challenges at the community level. Monitoring and tracking departmental or city-wide success should occur annually. This type of reporting should occur before the City budgetary process is launched to capture sustainability and resiliency opportunities in the new capital planning horizon. Several of the SAP Goals and Recommendations operationalize this process by promoting staff coordination and suggesting project narratives to be incorporated into City budget decisions.

In partnership with the City, a significant amount of data was collected for completion of the GHG Inventories, the GHG Forecast, the Resource Baseline Assessment, the VA, and the STAR preliminary assessment tool. The data elements collected appear below in ***Table 1***, which summarizes the main elements of the data requests.

TABLE 1: SUNRISE SAP DATA REQUEST SCOPE

Data Elements	Scope of Request
1. Initial Data Request	• **General City information** • **Land use, infrastructure and transportation** • **Facilities, sites and assets** • **Water and wastewater** • **Recycling and waste minimization** • **Fleet** • **Community-wide energy use and resource conservation** • **Regulatory framework** • **Climate/vulnerability initiatives** • **Education and outreach initiatives** • **Revenue and incentives**
2. Vulnerability	• **Tax roll (parcel) data** • **Flood insurance policies** • **Stormwater Master Plan** • **Groundwater elevation maps** • **Output from University of Florida GeoPlan Center Sketch Tool** • **Roads coverage** • **Sea-level rise scenario data** • **FEMA Flood maps**
3. Sustainability Data and STAR	• **Previous recommendations of the Sustainability Advisory Board** • **Data to populate STAR Crosswalk (See Appendix E)**

The actual initial data request is further summarized and detailed in ***Table 2*** below, which includes recommendations on how to streamline future data collection efforts. Insights gained from the data collection effort are also valuable for improving Sunrise's management of sustainability data. In some cases, Sunrise has not yet tracked the information useful to support sustainability planning and performance assessment. In other instances, changes to the way data is collected or organized would greatly facilitate management of Sunrise's sustainability programs and initiatives.

Table 2 below, details gaps in data tracking by Sunrise and recommendations for improving management of key indicators of sustainability performance. The table follows the format and numbering system of the *Sunrise Sustainability Data Request*, provided in **Appendix D.** For detailed descriptions of the items indicated, refer to the Data Request.

TABLE 2: GAP ANALYSIS RECOMMENDATIONS

Data Elements	Recommendations (with applicable item numbers from Data Request)
1. General Information	• **No recommendations**
2. Land Use, Infrastructure and Development, Transportation	• **No recommendations**
3. Local Government Operations	• **No recommendations**
A. Facilities, Sites, and Assets	• **Develop a comprehensive list of facilities that is cross-referenced with all utility accounts linked to those facilities (Appendix A: 3.1, 3.9, 3.10, and 3.14) as well as associated functional departments.** • **Track the floor area of all facilities. This will facilitate energy and water use intensity calculations (Appendix A: 3.4).** • **Compile information on maintenance management system (CMMS) and IT department green practices (Appendix A: 3.6).** • **Track fugitive emissions from HVAC and fire suppression equipment (Appendix A: 3.18, 3.19, and 3.20).** • **Consider additional sub-metering at multi-facility complexes or large facilities served by only one electric meter (i.e. co-located WTP/WWTP plants) (Appendix A: 3.14).**
B. Power Generation	• **Track generator run times and fuel consumption to measure performance and improve GHG emissions estimates (Appendix A: 3.22, 3.23).**

C. Water and Wastewater	• **Track potable water, irrigation and sewer use and expenditures separately and link to facility names, addresses, floor area and other details with a unique ID (Appendix A: 3.30, 3.31, 3.32, 3.33, 3.34, and 3.35).**
D. Recycling and Waste	• **Track actual facility waste generation (weigh containers at each pickup) in order to assess waste generation/diversion trends (Appendix A: 3.36, 3.41).** • **Track Hazardous and Universal wastes generated via government operations and associated expenditures. Ensure compliance with applicable regulations for labelling, safe handling, and disposal to reduce liability.**
4. Local Government Fleet / Transportation	• **Develop a tracking system for fleet data that allows the user to filter vehicles by department and type. Track / calculate vehicle miles travelled, fuel economy, maintenance expenditure and fuel expenditure by vehicle (Appendix A: 4.1, 4.2, 4.4, 4.5, 4.8, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, and 4.14).**
5. Community-wide Energy and Resource Conservation	• **No Recommendations**
6. Regulatory Framework	• **No Recommendations**
7. Climate Vulnerability/ Resiliency	• **Establish municipal GHG reduction goals/targets (Appendix A: 7.3)** • **Track Green Infrastructure (GI) projects for sustainability reporting purposes (Appendix A: 7.8)** • **Track vulnerable assets and adaptation action areas in the future (once these have been identified/established) (Appendix A: 7.17, 7.14, 7.15)**
8. Education and Outreach	• **Track sustainability education and outreach campaigns / activities, and their success (Appendix A: 8.1)** • **Track sustainability training of both new hires and existing employees (Appendix A: 8.2)**
10. Contacts	• **No recommendations**

B. Sunrise Sustainability Action Plan Goals and Recommendations

Sources that contributed to the SAP Goals and Recommendations include STAR, the Resource Management analyses, the VA, the SAB, the Bicycle & Pedestrian Advisory Board, and RCAP 2.0. The Goals and Recommendations serve as a comprehensive approach to implementation of the SAP. The SAP uses the City's existing policy framework as a vehicle to implement the SAP Goals and Recommendations. This existing policy framework includes, but is not limited to, the following components:

- The City's Comprehensive Plan, which drives the overall growth policy and capital planning procedures.
- The Sunrise Code of Ordinances, which includes policies and Land Development Regulations.
- Finally, the City may implement actions by general policy development through a particular department or manual.

All of these mechanisms can be used to implement the SAP goals and recommendations, some are more appropriate than others for achieving each recommendation. The SAP implementation strategy has been incorporated into a consolidated format within each Goal and Recommendation so anyone reading the SAP can understand the actors who may be involved in the implementation of each Goal and Recommendation. Each SAP Focus Area has a Goal and Recommendation matrix which describes where each recommendation links to STAR, the Compact's RCAP 2.0, or previous discussions by the SAB.

Many of the SAP Goals and Recommendations are ongoing in nature, but a specific year is designated for each recommendation to provide time to plan the actual launch and timeframe for its implementation. In this manner, recommendations can be sorted by year, by various City department, or by relationship to STAR, the SAB, or the Compact's RCAP 2.0. This structure allows for flexibility in tracking and reporting. The SAP should be reported on annually to provide City administration and leadership the opportunity to understand SAP progress. Given that many recommendations are closely linked to capital projects, this annual reporting should occur at the onset of the annual budgeting process.

SAP Goal and Recommendation Breakdown:

- **Resource Management**: 5 Goals and 26 Recommendations
  - **Page 64** of the SAP, Part III, Section C, Subsection i, Subsubsection h.
- **Sustainability**: 9 Goals and 53 Recommendations
  - **Page 73** of the SAP, Part III, Section C, Subsection ii, Subsubsection c.
- **Vulnerability**: 4 Goals and 15 Recommendations
  - **Page 81** of the SAP, Part III Section C, Subsection iii, Subsubsection d.

C. Sustainability Action Plan Focus Areas

The three SAP Focus Areas are: Resource Management, Vulnerability, and Sustainability. The purpose of each section of narrative is to provide the reader with background and context for how the Focus Areas fits into the larger SAP strategies to increase community resiliency and sustainability.

i. Resource Management

The Resource Management Focus Area is dedicated to assessing City and community-wide resource use and identifying areas for resource conservation. As part of this effort in collaboration with the City, the Team has created: GHG Inventories, GHG Forecast, Resource Baseline Assessment, Municipal Operations GHG Reduction Targets, and developed a suite of recommended Capital Improvement Projects. The identified targets, projects, and analyses have been incorporated into the Resource Management goals and recommendations.

a. GHG Emission Inventory

The GHG Inventory allows Sunrise to understand its contribution to heat-trapping pollution changing the climate. The GHG Inventory includes an analysis of emission sources from both municipal operations and community-wide aspects. While government operations are covered in the aggregate data used to develop the Community GHG Inventory, a specific GHG Inventory is also conducted for municipal operations to provide more detail for policy and operational changes. The municipal operations inventory follows the Local Government Operations Protocol ("LGOP"), which is the standard for municipal GHG inventories. The LGOP Inventory is considered a subset of the Community Inventory. Although many different gases contribute to climate change, emissions totals are expressed in terms of metric tons of carbon dioxide equivalent ("$MTCO_2e$")[1].

The inventory prepared by the Team, uses 2016 as the base year for the assessment. In 2016, the estimated Community emissions total was 1,318,300 $MTCO_2e$. LGOP, i.e. operations related to facilities, vehicles, and infrastructure, directly owned and/or controlled by Sunrise, were responsible for emitting 46,134 $MTCO_2e$ in the 2016 base year (3.5% of the Community inventory total). Both the Community and LGOP inventories were peer reviewed by a separate member of the Team to corroborate accuracy and for quality assurance.

1. Community Inventory

The Community inventory represents the total amount of GHG emissions associated with activities within the jurisdictional boundary of Sunrise during calendar year 2016. This total includes emissions from municipal government operations and activities. As a result, the LGOP inventory is considered a subset of the Community inventory. In 2016, community-wide emissions in Sunrise totaled 1,318,300 $MTCO_{2e}$. ***Table 3*** shows sectors included in the Community inventory, the activities in each sector, and the estimated emissions for each sector. ***Figure 2*** shows the percentage of the total contributed by each sector.

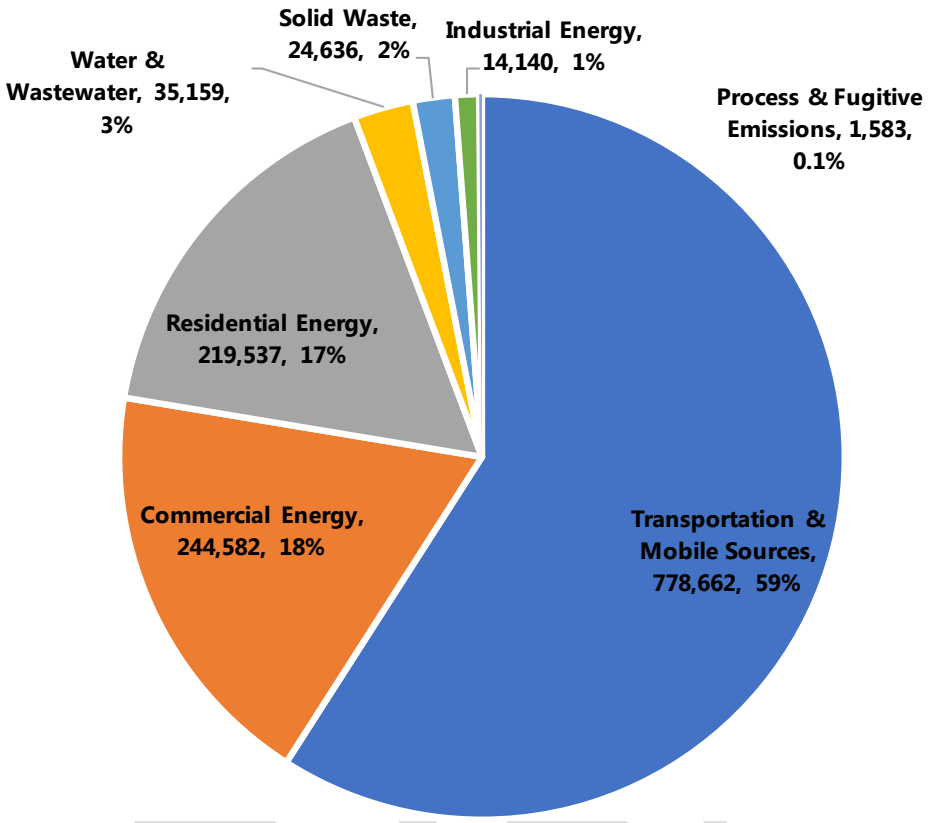
[1] CO_2e refers to carbon dioxide equivalent (CO_2e), a measure that describes how much warming a given type and amount of a greenhouse gas may cause, using the functionally equivalent amount of carbon dioxide (CO_2) as the reference.

TABLE 3: COMMUNITY INVENTORY SECTORS, ACTIVITIES, AND EMISSIONS

Sector	Activities	Emissions ($MTCO_2e$)
Transportation & Mobile Sources	*Natural gas fuel use – within boundary**	778,662
	Vehicle miles travelled	
Commercial	Electricity consumption	244,582
	Natural gas consumption	
	*Natural gas sales – outside of boundary**	
Residential	Electricity consumption	219,537
	Natural gas consumption	
	Natural gas sales – outside of boundary*	
Water and Wastewater	Process emissions from wastewater treatment	35,159
	Process emissions from nitrification / denitrification	
	Electricity consumption from supply of potable water*	
	Electricity consumption from wastewater treatment*	
Solid Waste		24,636
Industrial	Electricity consumption	14,140
	Public Street electricity consumption	
Process and Fugitive Emissions	Fugitive emissions from natural gas distribution	1,583
Total		***1,318,300***

*These Activities are marked "Information Only" in ClearPath and are not added to the inventory total. This is because the Activities either occur outside the City's jurisdiction or are already counted elsewhere in the inventory (e.g. "Natural gas fuel use – within boundary" is already included in the "Vehicle miles travelled" emissions estimate).

FIGURE 2: 2016 COMMUNITY INVENTORY EMISSIONS ($MTCO_{2E}$)



2. LGOP Inventory

The LGOP inventory allows Sunrise to understand its contribution to the community's emissions as a whole and to effectively plan to reduce those emissions over which it has significant influence or direct control. The LGOP inventory represents the total estimated GHG emissions associated with LGOP for calendar year 2016. In 2016, LGOP emissions totaled 46,134 $MTCO_{2e}$. ***Table 4*** below, shows sectors included in the LGOP inventory, the activities in each sector, and the estimated emissions for each sector. ***Figure 3*** shows the percentage of the total contributed by each sector.

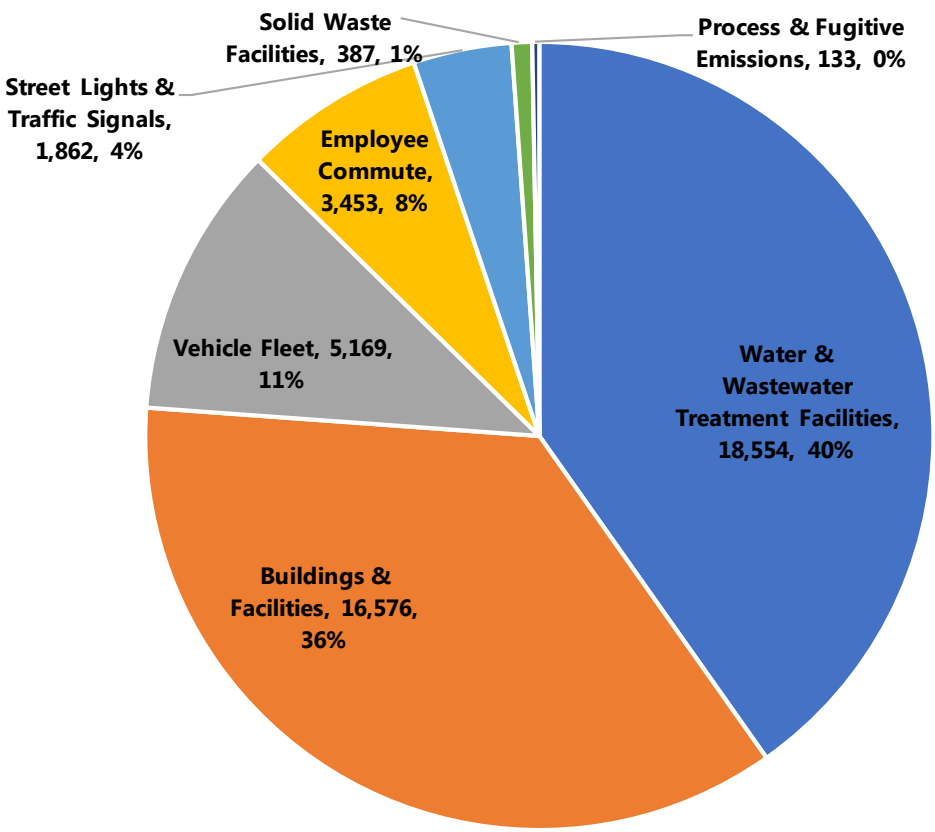
TABLE 4: LGOP INVENTORY SECTORS, ACTIVITIES, AND EMISSIONS ($MTCO_{2E}$)

Sector	Activities	Emissions $MTCO_{2e}$
Water and Wastewater Treatment Facilities	Electricity consumption Stationary fuel combustion Electric power grid losses	18,554
Buildings / Facilities	Electricity consumption Electric power grid losses Stationary fuel combustion	16,576
Vehicle Fleet	Fuel consumption	5,169
Employee Commute	Employee commute emissions	3,453

Streetlights & Traffic Signals	**Electricity consumption (Streetlights)****	**1,862**
Solid Waste Facilities	**MSW incineration emissions from waste generation at city facilities** **Biosolids land application*** **Biosolids landfill disposal***	**387**
Process & Fugitive Emissions	**Mobile Source (Fleet) fugitive emissions**	**133**
Total		***46,134***

*These Activities are marked "Information Only" in ClearPath and are not added to the inventory total, because they occur outside the City's jurisdiction. **Activity includes "Public Street" accounts billed by FPL. Other accounts that may relate to lighting are not included in reported totals but have been calculated for information purposes only.

FIGURE 3: 2016 LGOP INVENTORY EMISSIONS ($MTCO_2E$)



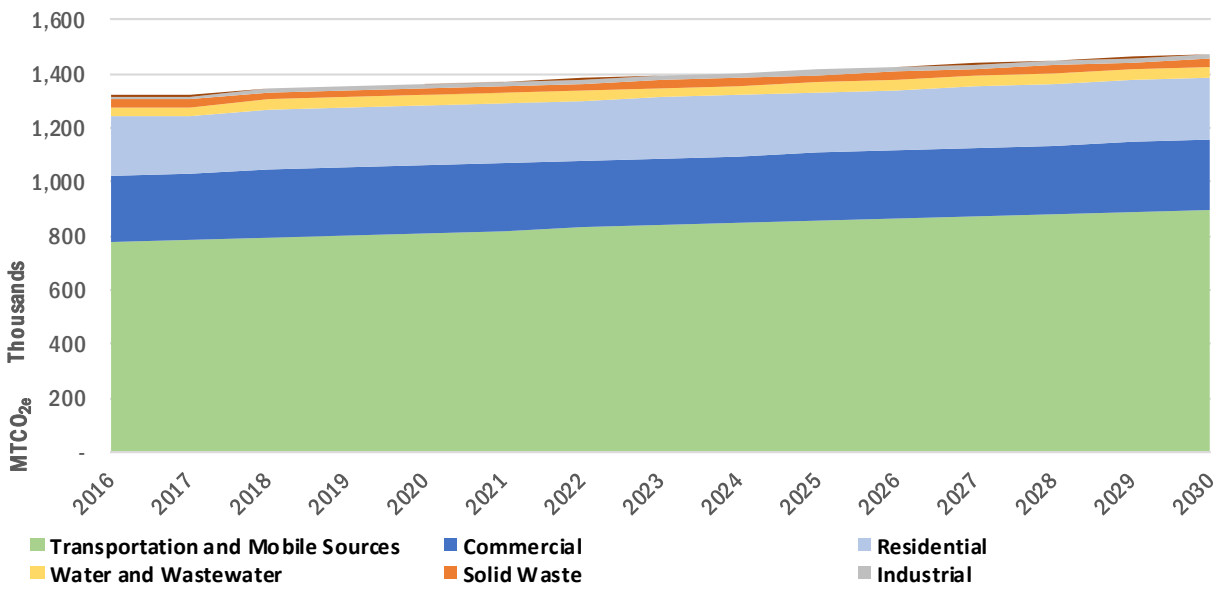
b. GHG Emission Forecast

A GHG inventory is a baseline for measuring and reporting emissions. A GHG forecast projects changes in emissions over time. The projection estimates how factors such as population growth, energy use, water use, and transportation demands might affect emissions under a business-as-usual ("BAU") scenario. A BAU scenario assumes no policy or technological changes are put in place to affect the GHG baseline. By comparing the BAU forecast with the baseline, Sunrise can evaluate investments to reduce emissions. The Team prepared BAU GHG emissions forecasts for both Community and LGOP GHG emissions over a 15-year time period beginning with the 2016 baseline year. The forecast is based on projected growth rates for energy, transportation, waste and water/ waste and water demand derived from government sources, including the United States Energy Information Administration, Federal Highway Administration, SFWMD, and Broward County. The forecast projects an 12% increase in both Community and LGOP emissions.

1. Community Forecast

The forecast indicates growth in Sunrise's commercial and residential energy sectors, along with transportation and mobile sources, which will result in GHG emissions increasing about 12% by the year 2030 (from the 2016 baseline value of 1,318,300 MTCO2e to 1,473,587 $MTCO_2e$ in 2030) as depicted in ***Figure 4*** below. Increased emissions from the Water & Wastewater, Solid Waste, Industrial, and Fugitive Emissions categories are less significant since they make up a smaller proportion of the inventory total.

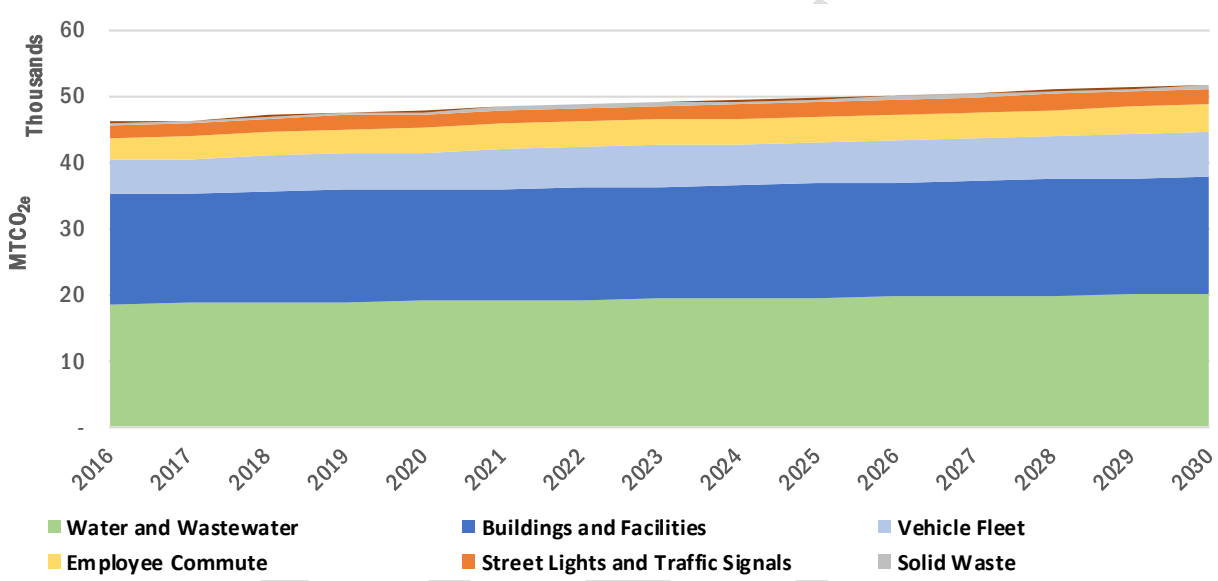
FIGURE 4: COMMUNITY GHG FORECAST



2. LGOP Forecast

The LGOP GHG emissions forecast is displayed in ***Figure 5*** which shows increases in the energy demand for water/wastewater treatment; increases in energy use by buildings & facilities; and, the increases in fleet vehicle fuel use. The growing demands will result in GHG emissions gradually increasing 12% from the 2016 baseline value of 46,134 $MTCO_2e$ to 51,714 $MTCO_2e$ by 2030. Increases in other emissions categories are less significant, since they make up a smaller proportion of the inventory total.

FIGURE 5: LGOP GHG FORECAST



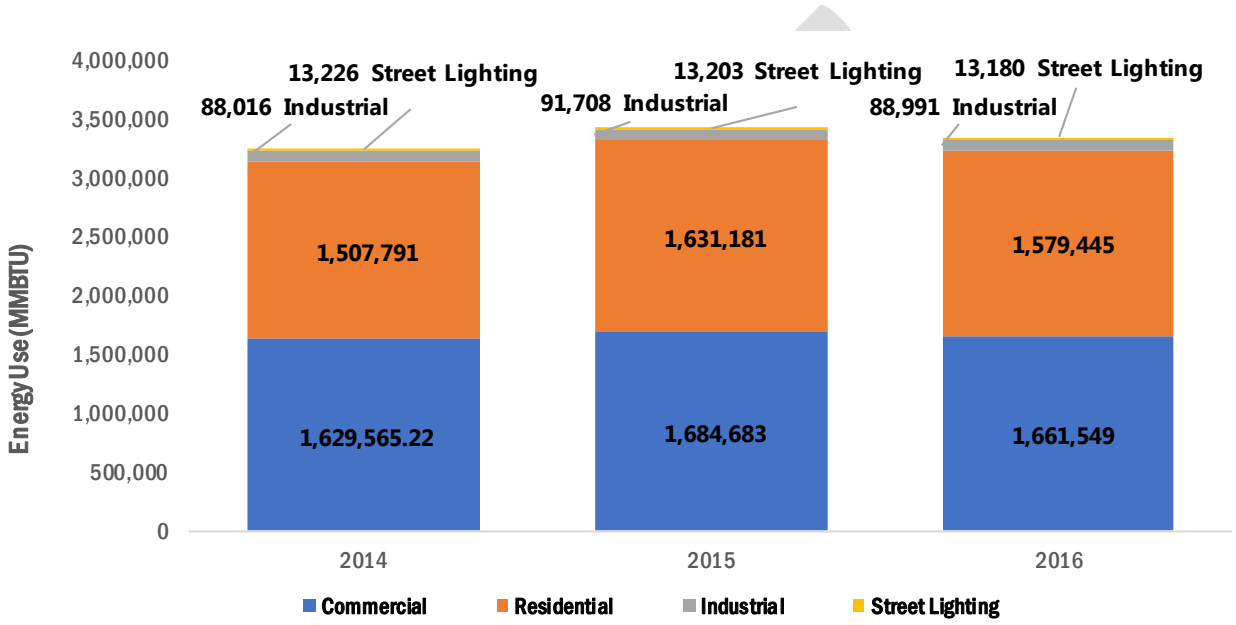
c. Resource Baseline Assessment

The Sunrise Resource Baseline Assessment is a reference tool that can be used to measure City performance in categories such as energy, fuel, water, and waste – before creation of the SAP and during the implementation of the SAP goals and recommendations. The Baseline Assessment was used to identify unsustainable resource use and to flag opportunities where resources could be saved. Baselines of Sunrise's electricity use, natural gas use, water use, fleet energy use, and waste management use were developed using 2014, 2015, and 2016 data (where available). The Resource Baseline Assessment not only characterize the City's resource use but identifies the originating sources of GHGs that are analyzed in the previous sections. As Sunrise further develops and grows the Resource Baseline can be used to manage the City's resource use and GHG footprint overall.

1. Electricity

Community electric consumption totaled 3,340,000 million British thermal units ("MMBTU") or 980.5 million kilowatt-hours in 2016, according to records provided by Florida Power and Light ("FPL"). Commercial and residential consumption dominate usage. Industrial and street lighting usage is relatively small. Usage remained about flat from 2014 through 2016, as depicted below in ***Figure 6***. During this period, expenditures have dropped slightly, due to small reductions in the unit cost of electricity.

FIGURE 6: 2014-2016 ANNUAL COMMUNITY ELECTRIC USE (MMBTU)



As with the Community, the LGOP energy use has remained flat, after increasing in 2015 and decreasing in 2016. Expenditures have decreased slightly, for the same reason as stated above. ***Table 5*** summarizes LGOP energy use, expenditure, and unit costs from 2014 through 2016 for Sunrise's 1,011 utility accounts. Note this includes some accounts for facilities located outside of Sunrise's jurisdiction, but all owned/operated by Sunrise.

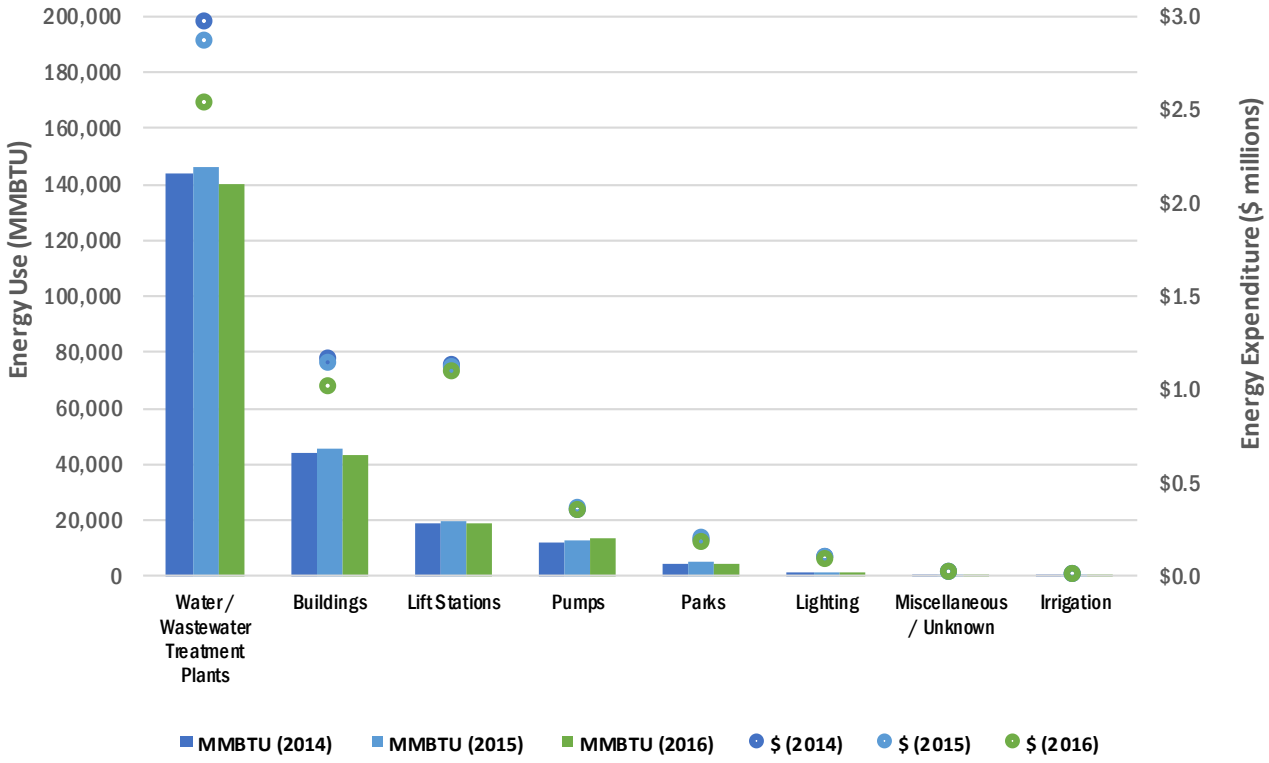
TABLE 5: 2014-2016 ANNUAL LGOP ELECTRIC USE, EXPENDITURE, AND UNIT COSTS

	2014	2015	2016
Electric Use (MMBTU)	**224,816**	**230,978**	**222,066**
Energy Expenditure ($)	**$5,888,115**	**$5,777,479**	**$5,254,236**
Average Unit Cost ($/KWh)	**$0.089**	**$0.085**	**$0.081**

Within these totals, Sunrise's water and wastewater treatment plants consume the most electricity and represent the greatest expenditure, followed by buildings, lift stations, pumps and parks. In the water and wastewater treatment category, use and expenditure have trended downwards by 3% since 2014. In other categories, use and expenditure have remained relatively unchanged or have increased (***Figure 7***).

Usage was allocated to these categories subjectively, based on correlating information on Sunrise facilities and infrastructure with account information provided by FPL, including the account address and description. For example, FPL account descriptions differentiate between lift stations (e.g. "#LS173") and pumps (#STORM PUMP 4).

FIGURE 7: 2014-2017 ANNUAL MUNICIPAL ENERGY USE (MMBTU) AND EXPENDITURE ($) BY END USE

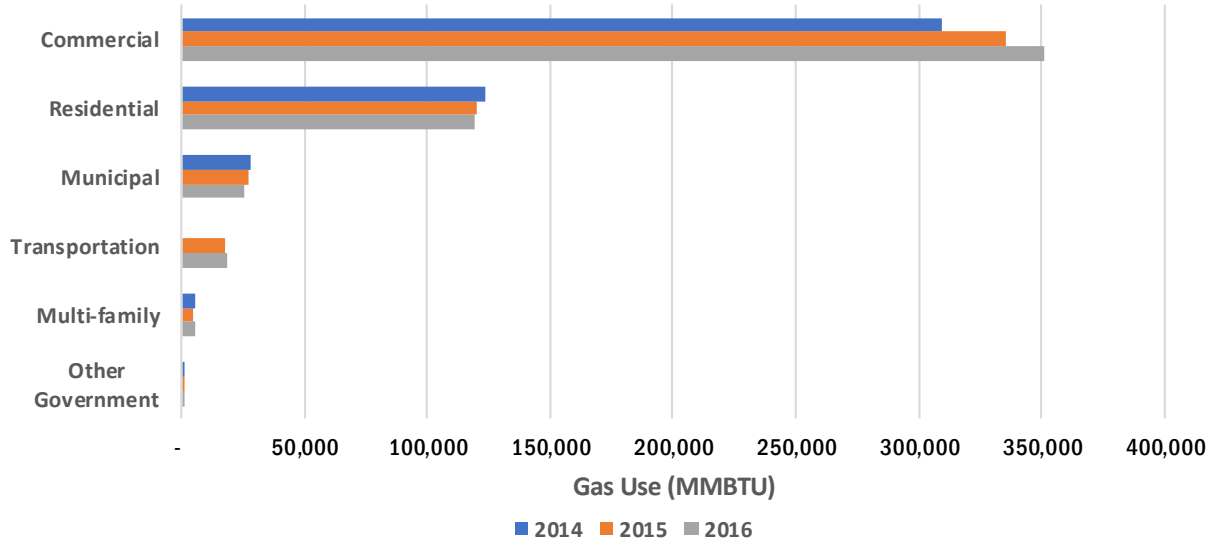


Available data did not provide precise identification of billing records with facilities. Facility data correlated with energy use, such as floor area, occupancy, and end use, was also unavailable, limiting the ability to compare facility operation both within Sunrise's real estate portfolio and against national benchmarks.

2. Natural Gas

In 2016, Sunrise's natural gas utility provided about 521,000,000 MMBTU to about 9,200 commercial, residential, multi-family residential, government, and transportation accounts (***Figure 8***). Slightly less than 95% and 5% of accounts are residential and commercial, respectively, with a small number of significant users in the other categories. While smaller in number, commercial accounts used about 67% of the gas, the residential sector using about 23%. Commercial accounts show an increasing trend from year 2014 to 2016, while other categories showed little change. LGOP consumed approximately 25,500 MMBTU, about 5% of total consumption. Expenditure data was not available. About 10% of natural gas use occurs outside of the corporate limits of Sunrise, including locations in Tamarac, Lauderhill, and Weston.

FIGURE 8: 2014-2016 COMMUNITY AND MUNICIPAL GAS USE



3. Water

Sunrise's water utility provided about 5.3 billion gallons to over 61,000 commercial, residential, residential multi-family, and government accounts in 2016. About 93% of accounts were residential, 2% multi-family, and 5% commercial, and 0.10% government. Residential accounts used 64% of the total, followed by multifamily 19%, and commercial 16%. LGOP consumed about 26 million gallons (25,854). Community water use remained flat from fiscal year 2014 through fiscal year 2016 at about 5.3 billion gallons (***Figure 9***). Irrigation accounts consumed an additional 67 million gallons in 2016, a little more than 1% of total water and irrigation use. The wastewater system measured about 4.9 billion gallons of generation in 2016. Expenditure data was not available. Municipal water and irrigation use has increased slightly (~2%) since 2014 (***Figure 10***).

FIGURE 9: 2014-2016 COMMUNITY WATER USE (THOUSAND GALLONS)

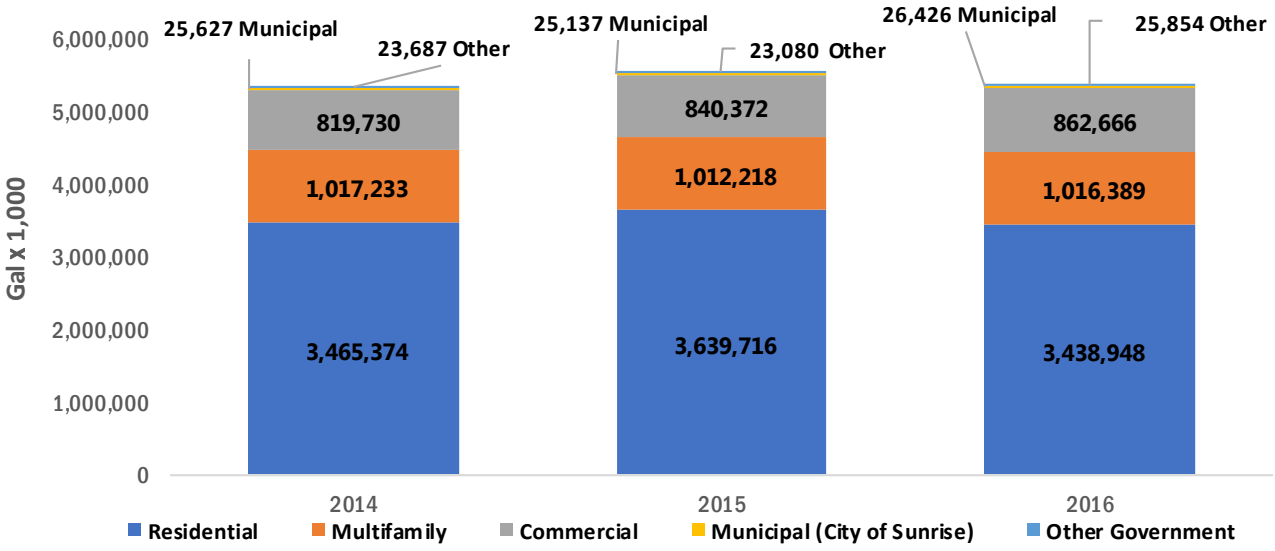
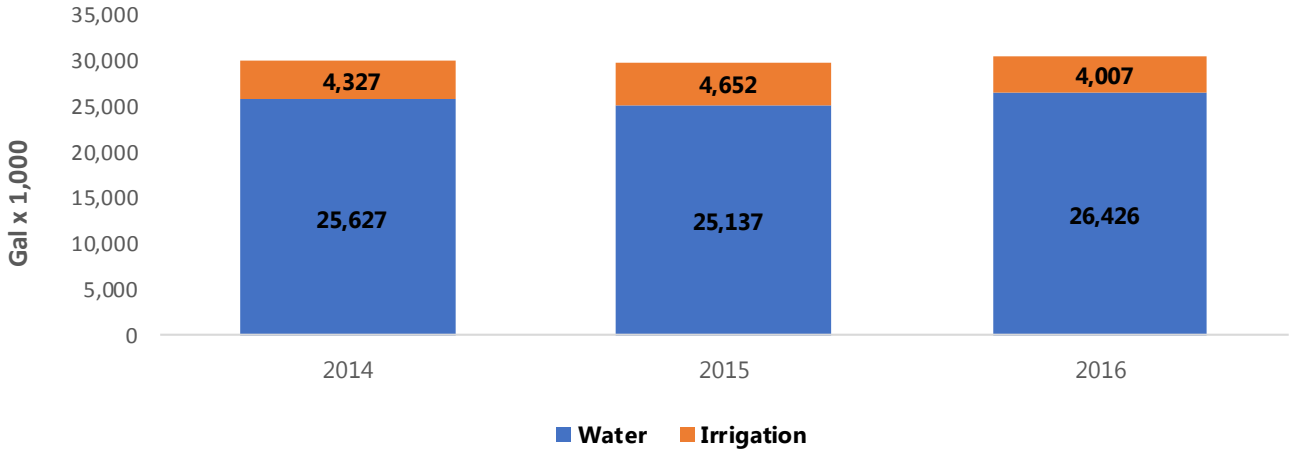


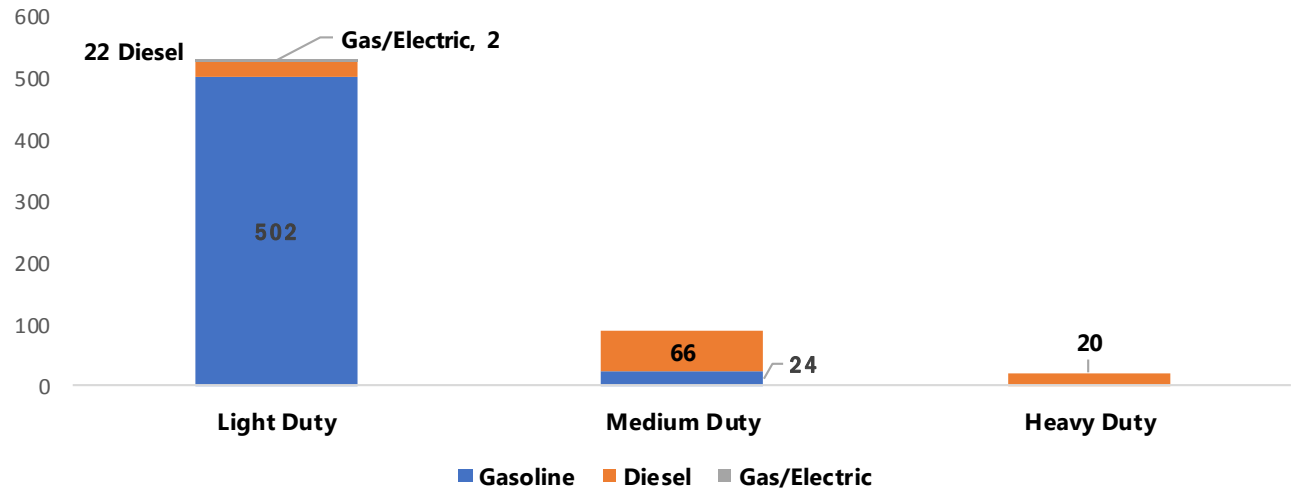
FIGURE 10: 2014-2016 MUNICIPAL WATER AND IRRIGATION USE (GALLONS X 1,000)



4. Fleet

Sunrise operates approximately 636 on-road vehicles within its transportation fleet, a ratio of about 0.65 vehicles per employee. The majority of vehicles (79%) are light duty, gasoline vehides. Of these, about 51% are passenger vehicles and 49% are light trucks[2] (***Figure 11***).

FIGURE 11: ON-ROAD VEHICLE COUNTY BY WEIGHT* AND FUEL



[2] Light trucks include Class 1 and Class 2 trucks, which have a gross vehicle weight rating (GVWR) of < 6,000 lbs and 6,000 – 10,000 lbs, respectively. *The Federal Highway Administration defines Light duty as having a Gross Vehicle Weight Rating (GVWR) of <10,000 lbs, Medium Duty: 10,001 – 26,000 lbs and Heavy Duty: >26,001 lbs.

There are about 152 non-road or otherwise uncategorizable vehicles in Sunrise's transportation fleet, including construction, lawn maintenance, and utility vehicles not included within this analysis. The on-road fleet average vehicle model year is 2011 and the average odometer reading is about 45,000 miles. There are between 78 and 135 vehicles that have a model year or mileage one standard deviation greater than the average (***Table 6***). This quantity may be an indicator for the number of vehicles ready for replacement or right-sizing (i.e. removal from the fleet without direct replacement).

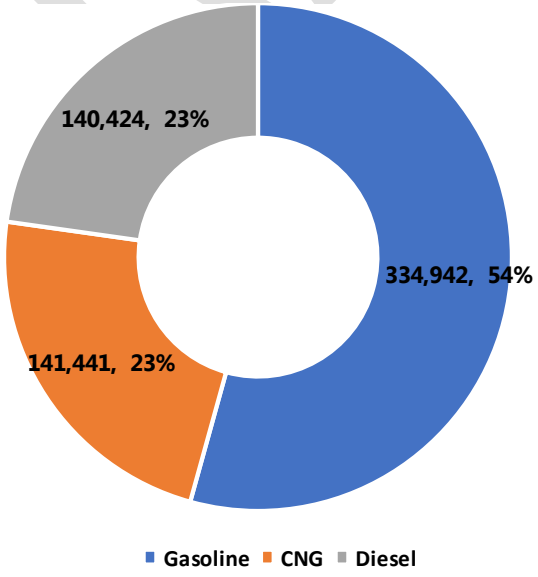
TABLE 6: AVERAGE VEHICLE AND MILEAGE, WITH COUNTS OF OUTLIERS

Weight Class	Average Model Year	Outliers*	Average Mileage	Outliers**
Light Duty	2011	64	47,500	57
Medium Duty	2012	10	31,700	73
Heavy Duty	2010	4	35,000	5

*The number of vehicles with a model year one standard deviation from the average (e.g. for Light Duty vehicles the standard deviation is 4. There are 64 vehicles with a model year older than 2007 (2011 – 4).
**The number of vehicles with mileage greater than one standard deviation from the average (e.g. for Heavy Duty vehicles the standard deviation is 37,681. There are 5 vehicles with a mileage greater than 72,631 (34950 + 37681).

Sunrise's fleet used 616,807 gaseous gallons equivalent ("GGE") of fuel in 2016.[3] According to data provided by the fleet department, 334,942 GGE of gasoline was used and 141,441 GGE of diesel was used. According to data provided by the Utilities Department, 140,424 GGE of compressed natural gas ("CNG") was used (***Figure 12***). Data on associated expenditures was unavailable. Data on fuel use, fuel expenditure, vehicle miles traveled, fuel economy and maintenance expenditures on a by-vehicle basis was also unavailable.

FIGURE 12: 2014-2016 MUNICIPAL FUEL CONSUMPTION GGE



[3]CNG use for October – December 2016 is estimated based on data provided for 2015

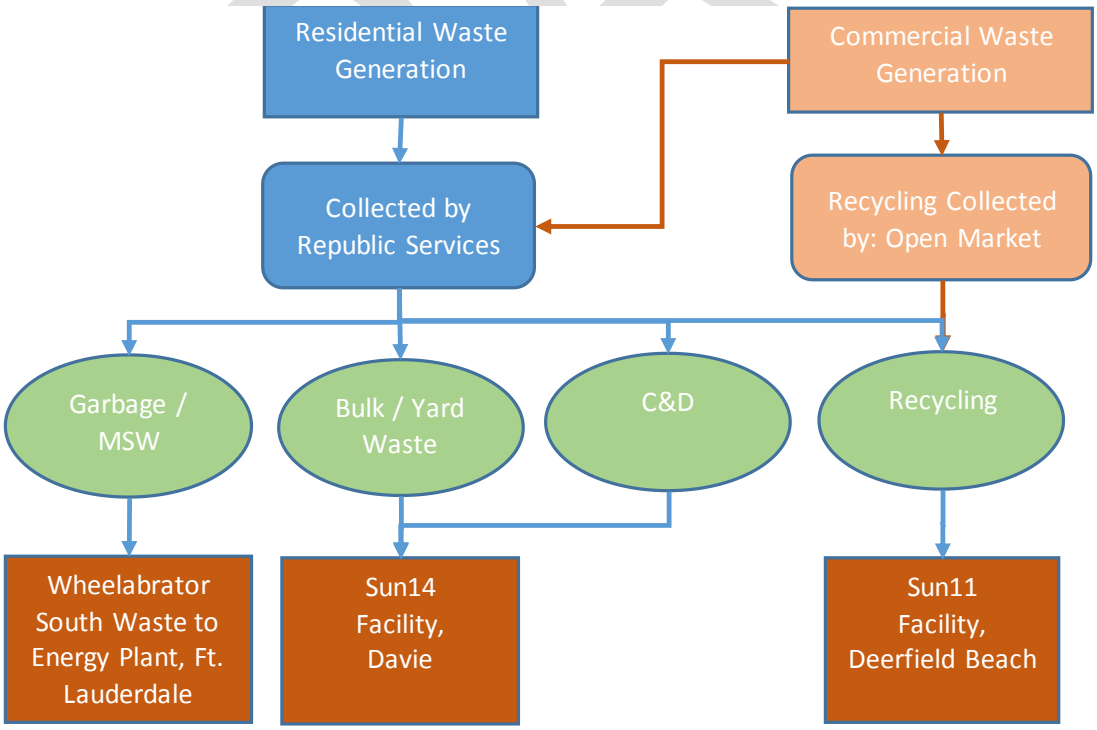
5. Waste

Sunrise's Public Services Division provides residents and businesses with garbage, recycling, and bulk trash collection services. Garbage and recycling services are billed on the customer's water account. Municipal solid waste ("MSW"), recycling pickup, and waste transportation is provided via a franchise agreement with Republic Services (dated July 12, 2016), formerly known as All Service Refuse. Republic Services also collects bulk/yard waste and commercial construction and demolition ("C&D") waste. Commercial Recycling is open market (i.e., collected by various entities). ***Figure 13*** shows the various materials collected, the collection entity, and the facilities that receive the material.

Republic Services transports MSW to the Wheelabrator South Waste-to-Energy Facility, located in Ft. Lauderdale, Florida. At the facility, metal recyclables are removed from the waste stream and the remaining material is combusted to produce energy. Residential and commercial recycling are transported to the Sun11 facility in Deerfield Beach, Florida, for processing.

C&D and Bulk/yard waste are transported to the Sun14 Facility in Davie, Florida. At the Sun14 facility, marketable material is recovered from the waste stream for recycling. Yard waste (i.e. green waste) is separated out and mulched. Some portion of remaining material may be landfilled; however, no information about the quantity or final destination of this material was available.

FIGURE 13: SUNRISE WASTE COLLECTION SYSTEM



In 2016, Sunrise generated 64,349 tons of MSW, 4,986 tons of recyclable materials, 7,442 tons of yard waste, and 11,773 tons of C&D waste. Sunrise's MSW generation rate was 31% above the national average of 2,600 lbs/household. Many factors can contribute to a city having an above-average MSW generation rate, such as: socio-economic status, commercial activities, education levels, income, tourism, transient population, government policies, etc. Further data collection and analysis beyond the scope of this study would be needed to identify the principal causes for Sunrise's MSW generation rate.

Sunrise's total community-wide diversion rate for 2016 was 27.3%, which is lower than the national recycling rate of 34.6%.[4] The figure above includes Bulk/yard waste and C&D waste but does not include incinerated MSW. The city-wide residential recycling rate is 7.2% of the MSW and recycling total.

Currently, Sunrise 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, Sunrise facilities generated 833 tons of MSW and 128 tons of recyclables for a 13% diversion rate. ***Table 7*** summarizes waste management for City facilities and community-wide.

TABLE 7: 2016 WASTE MANAGEMENT SUMMARY

Metric	City of Sunrise Facilities	Community-wide
C&D Waste (tons)	**Not Provided**	**11,773**
Bulk/Yard Waste (tons)	**Not Provided**	**7,442**
Garbage (MSW) (tons)	**2,106**	**64,349**
Recycling (tons)	**339**	**4,986**
Diversion Rate	**13.9%**	**27.3%**
Recycling Rebate @ $28/ton	**$3,574**	**$37,037**

In October 2017, MSW and C&D tipping fees charged to Sunrise were $43.98 and $38.16 per ton, respectively. Sunrise does not appear to realize any revenue from recyclable materials. According to Sunrise's "Notice of Full Cost of Solid Waste Management", the average annual cost of solid waste management services in 2016 was $182.76 for Residential Class I customers, and $102.36 for Residential Class II customers (mostly high-rise condominiums).

[4] The diversion rate was determined with the following formula, diversion rate = (C&D waste + Bulk / Yard Waste + Recycling) / (C&D waste + Bulk / Yard Waste + MSW + Recycling).

Sunrise holds quarterly household hazardous waste ("HHW"), electronics, and paper shredding collection events. In 2015, the most recent year for which information was available, Sunrise collected 25.11 tons of HHW, 5.36 tons of electronics, and 7.69 tons of paper at these events. Disposal details, specific materials collected, and Sunrise expenditures were not available. Biosolids generated at Sunrise's Wastewater Treatment Facilities are collected and transported for either landfill disposal or land application. Sunrise reported sending 1843 tons for landfill disposal and 843 tons for land application in 2016.

Community Sustainability Stewardship Case Study:

The Composting Network, LLC

Compost is decomposed organic material which provides essential nutrients for plant growth. A community composting program can create a natural resource and divert pre-consumer food waste from ending up in landfills. Composting programs exist at the neighborhood, community, and regional levels, in many urban, suburban, and rural areas throughout the Nation. Composting locally provides many benefits such as: improved soil composition, local job creation, decreased need for garbage hauling, diversion of materials from landfills, which in-turn extends the life of regional landfills, and breeds a sustainable community culture.

Within the **City of New Orleans**, **Louisiana**, there is "**the Composting Network, LLC**" a composting network which includes residential buildings, restaurants, schools, and commercial businesses. The Composting Network collects pre-consumer waste by collecting food scraps such as vegetable peels, fruit tops and cores, coffee grounds, and other materials. Members of the Composting Network participate by opting into a composting plan which involves a 5-Day, 3-Day, and 1-Day Per week pickup. The Composting Network, LLC provides each program member with a composting bin and a monthly statement indicating the amount of waste collected each month. This program also helps restaurant participants with obtaining a rating with "the Green Restaurant Association." The Composting Network, LLC uses the collected scraps to create a natural compost used in local community gardens or can be sold to interested parties.

Information adapted from: (Institute for Local Self-Reliance https://ilsr.org/wp-content/uploads/2014/07/growing-local-fertility.pdf)
(The Composting Network http://compostingnetwork.com/site/)

d. Municipal Operations Greenhouse Gas Reduction Targets

Increasing Sunrise sustainability starts with using resources wisely. For the Sunrise to be effective in measuring its progress, particularly in the Resource Management Focus Area, Sunrise adopted GHG Reduction Targets for municipal operations (***Table 8***). Adoption of GHG reduction targets is a common strategy widely practiced by Florida jurisdictions and throughout the nation. Local governments have greater control over emissions related to municipal operations because data management and collection can be better researched, thus it is easier to manage progress towards achieving targets set for municipal operations than it would be to reach a community-wide target. Not only is the data easier to secure, but the actual decisions themselves related to resource management originate with City Administration or other staff.

Broward County established a community-wide GHG emission reduction target in 2008, providing for 2% reduction goal in 2007 emissions by 2025, and an 80% reduction goal in 2007 emissions by 2050.[lii] Broward County updated their GHG emission reduction target in 2015, to reduce emissions 2% per year providing for a 10% reduction by 2020.[liii] In 2015 only 24% of Broward County jurisdictions reported that they had completed GHG inventories.[liv] Setting GHG reduction targets is a critical first step in reducing emissions; by identifying the Municipal Operations GHG Reduction Targets Sunrise has the opportunity to be a sustainability steward for Broward County and support broader emission reduction efforts. The Sunrise SAP Municipal GHG Reduction Targets identified below become more aggressive over time and include mid and long-range reductions.

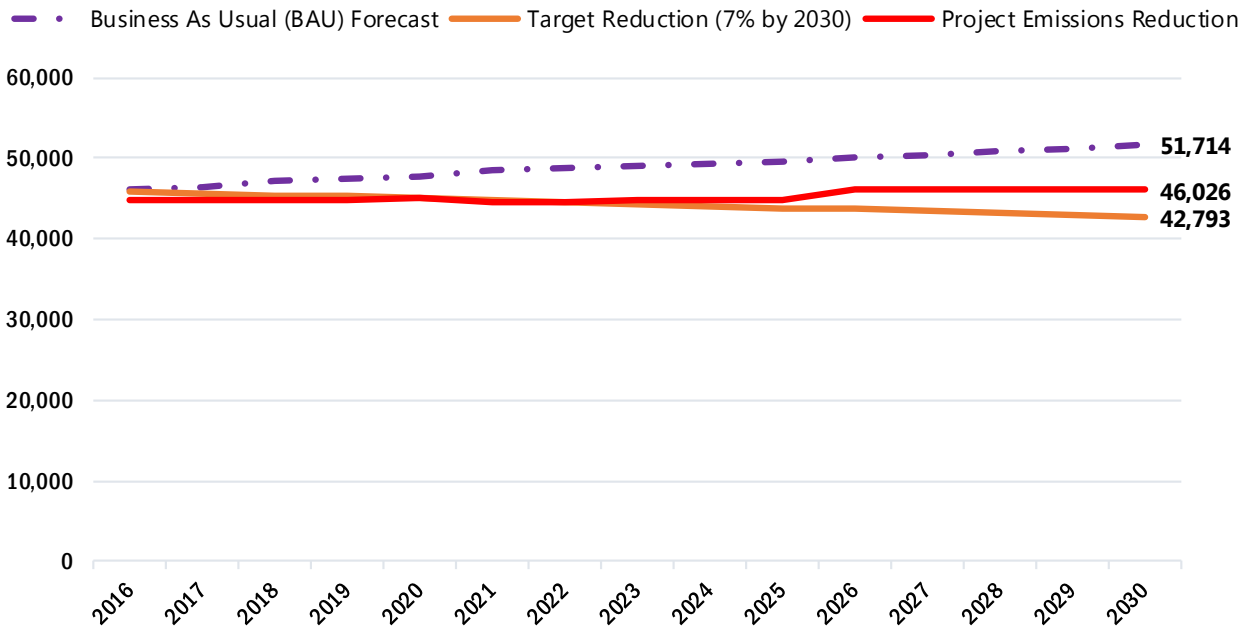
TABLE 8: MUNICIPAL GHG REDUCTION TARGETS

Target	Mid-range Reduction Target 2016-2030	Long-range Reduction Target 2031-2060
0.5%	**7% Reduction from 2016 levels**	
1%		**43% Reduction from 2016 levels**

Continued monitoring and tracking of GHGs should also occur for community-wide emissions, with a routine standard including a re-inventory of emissions no more than every five (5) years to determine trends and adjust strategies that address community-wide energy use. It is good practice for the City to monitor those emissions, of which municipal operations account for a portion for potential development of a target in the future should the City desire pursuing that.

Figure 14 reflects the BAU forecast (which is an anticipated increase of 12% in emissions through 2030) vs. the reduction target of 7% by 2030. Note that the 7% from 2016 target assumes 0.5% reduction in GHG emissions in 2017 and 2018 – earlier than the anticipated start date of the capital projects listed (estimated to begin in 2019).

FIGURE 14: SUNRISE MUNICIPAL EMISSION FORECAST AND TARGET REDUCTION FROM 2016 BASELINE



e. SAP Capital Project Recommendation Memo

The SAP includes an initial suite of eight (8) capital projects that could be used to demonstrate the cost-benefit of implementing sustainability-related capital improvement projects. While various capital projects have been identified and described in the SAP Capital Project Recommendations Memo (**Appendix F**), the Team committed to full cost-benefit evaluation of eight (8) projects to demonstrate projects with clear economic gains as a starting point for the City.

Recommended Eight (8) Capital Projects:

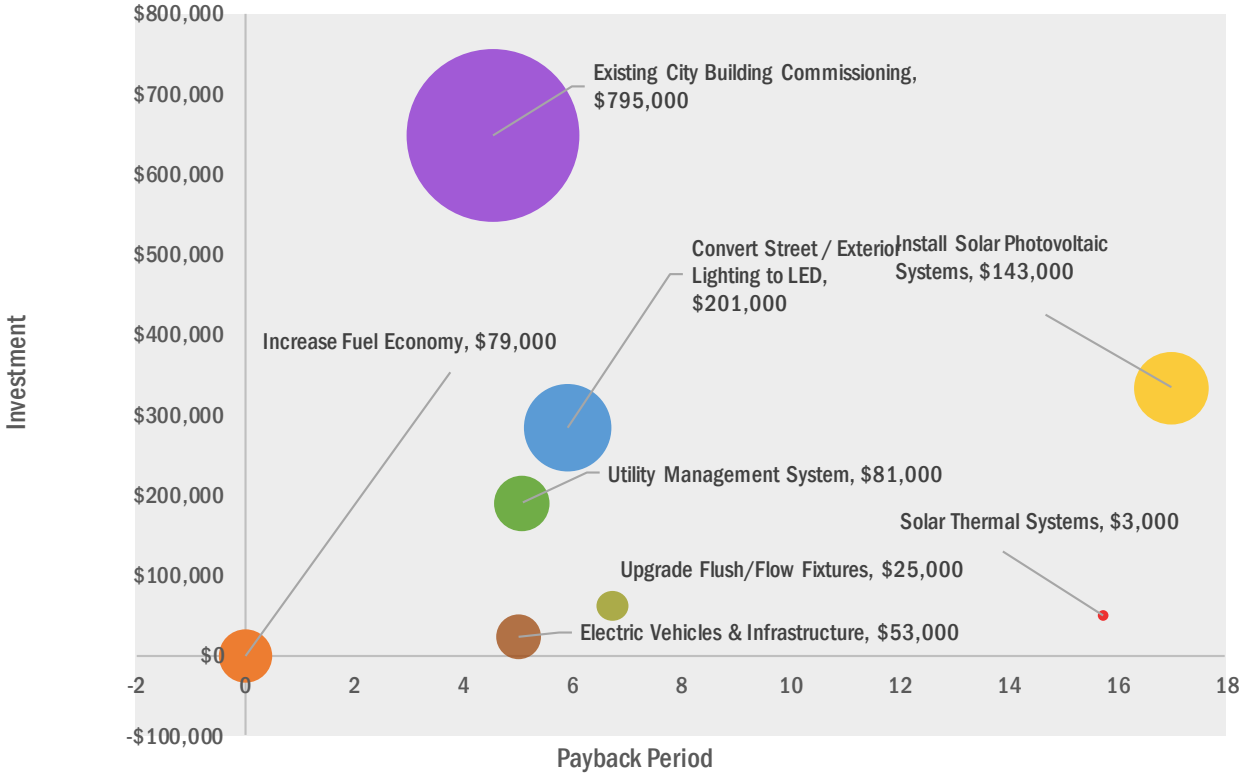
1. **Existing Building Commissioning**
2. **Convert Street / Exterior Lighting to LED**
3. **Install Solar Photovoltaic Systems**
4. **Upgrade Flush/Flow Fixtures**
5. **Utility Management System**
6. **Procure Electric Vehicles and Infrastructure**
7. **Solar Thermal Systems**
8. **Increase Fuel Economy**

These projects were selected by the Team and City staff after opportunities for improvement in the Resource Baseline Assessment were identified. Over ten years, the eight (8) projects which appear in the box to the right, have the potential to produce about $3.0 million in returns from an investment of $1.6 million, for a net benefit of over $1.0 million and a return on investment of 89%.[5]

The projects were selected to demonstrate a well-rounded portfolio. They include both short and long payback periods and small and large scopes. ***Figure 15*** below illustrates the cost benefits of each project; larger circles correspond to greater net benefits. Projects located in Quadrant 1 represent "low-hanging fruit," with modest investment (y-axis) and quick payback (x-axis).

[5] Net benefit is equivalent to profit, or the difference between investment and returns over the life of the project, adjusted for the time-value of money (Discount Rate: 2.5%). Return on investment is a ratio of project net benefits to total investment.

FIGURE 15: ESTIMATED 10-YEAR NET BENEFIT, INVESTMENT COST, AND PAYBACK OF PROPOSED PROJECTS



These projects can form the basis of a sustainability portfolio that may be developed, implemented, managed, and expanded over time. As projects are implemented, their economic returns can be used to grow the sustainability program. These rough orders of magnitude business cases include costs and benefit estimates are based on vendor quotes, case studies, and engineering analyses. For more information on each current project's net benefit, economic returns, investment cost, return on investment, payback period, and project life, followed by a brief description of the project scope, please see **Appendix F.**

It should be noted, that the eight (8) identified projects can contribute to meeting 35% of the SAP Mid-range Municipal GHG Reduction Target (2016-2030). The City will still need to undertake additional goals to meet the SAP Long-range Municipal GHG Reduction Target (2031-2060). The combined GHG emission reductions for all eight (8) projects analyzed would be 13,480 $MTCO_{2e}$ by 2030 (assuming implementation begins in 2019).

The SAP Capital Project Recommendations Memorandum in **Appendix F**, also includes a full suite of other potential future projects that can form the nucleus of a sustainability portfolio. These additional project narratives do not involve a cost-benefit analysis but instead describe best management practices regarding sustainability projects employed successfully by other local governments. The projects are organized into four categories: Energy, Fleet, Water, and Materials Minimization & Recycling. These projects should be reviewed and considered for implementation at a later time.

f. Sustainability Return on Investment Analysis

While the economic profitability of a capital improvement project is an important consideration for Sunrise decision makers, the "triple bottom line" of a project must also be considered. The SROI was calculated using an economic analysis tool called Autocase©, which uses project specifications with industry-validated data to measure net impacts. The triple bottom line advances the goal of sustainability in project decision making as its focus extends beyond just considering the financial costs and benefits to include social and environmental issues as well. An example for social and environmental issues is the impact to human health and the associated medical costs that could be incurred or abated with a reduction in air pollution. The Team used the SAP Capital Project Recommendations Memo to identify three (3) projects to be utilized for the SROI Analysis.

Autocase© is a unique tool widely used by economists and local governments to capture more than just the monetary benefits of a project. Using federal guidance and peer reviewed values associated with various impacts – like the social value of air pollution, carbon emissions, and renewable energy production – Autocase© can characterize the overall cost/benefit realized by various stakeholders corresponding to a specific project. The SROI Analysis was used to characterize three energy related projects slated for Sunrise in the SAP Capital Project Recommendations Memo.

The projects selected include:

- Existing Building Commissioning,
- Installation of Solar Photovoltaic (PV) Systems, and
- Installation of Solar Hot Water Systems.

Data associated with the above-mentioned projects was entered into Autocase© with data derived from three existing Sunrise facilities to test if overall project benefits would exceed estimated costs. The buildings analyzed for the three (3) projects include the Sunrise Natural Gas Utility Building, the Sunrise Public Safety Complex, and Fire Station # 83. The graphic on the right represents the SROI associated with undertaking existing building commissioning and installation of a Solar PV system on the Natural Gas Utility Building.

The values that appear in red represent costs associated with the two projects, values in black represent added value from the projects.

Value by Stakeholder	
Cost or Benefit Category	**Lifetime Value**
	Natural Gas Utility Building
Improvement Project	Existing Building Commissioning PV System
City of Sunrise	
O&M (excluding utilities)	($3,109)
Electricity Costs	$221,967
Capital Expenditure	($277,531)
Residual Value of Assets	$4,757
Replacement Costs	($85,717)
Lifecycle Financial Total	*($139,633)*
Community	
Air Pollution	$94,554
Carbon Emissions	$80,201
Social & Environmental Total	*$174,755*
Stakeholder Group Totals	
Owner Occupant	($139,633)
Community	$174,755
Triple Bottom Line *or* Net Present Value (NPV)	**$35,122**

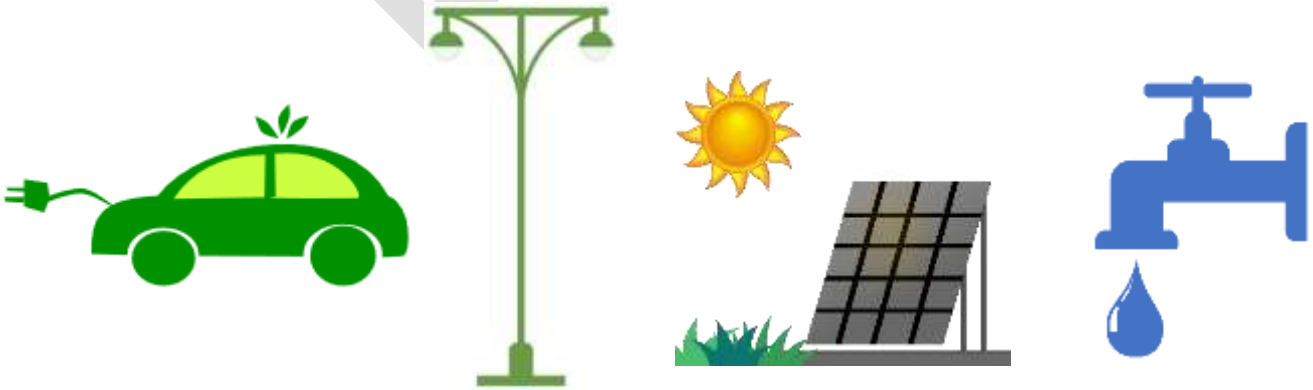
In the final gray portion of the graphic "Stakeholder Group Totals" depicts the total costs and benefits for each stakeholder. It is estimated that the two projects slated for the Natural Gas Utility Building will cost Sunrise and estimated $139,633 but the net financial, social, and environmental benefits represent $174,755 in added value for the community. Therefore, the triple bottom line for this project is $35,122.

In sum, the Team determined all three of the identified projects (Existing Building Commissioning, Installation of Solar PV Systems, and Installation of Solar Hot Water Systems) would have a positive SROI if applied to the identified facilities. For further detail and information about the SROI Analysis and the calculations used to monetize non-financial benefits please see **Appendix G.**

g. Resource Management Conclusions

Pursuant to the SAP, the City has multiple opportunities to improve resource management by City operations and community-wide, i.e. energy and water conservation, curbing GHG emissions, and the transition away from the reliance on fossil fuels. In implementing the SAP Goals and Recommendations Sunrise will be contributing to State-wide and County efforts to reduce GHGs. Sunrise has identified mid-range and long-range municipal operation GHG reduction targets, such targets will help Sunrise monitor success of sustainability policies guide future strategies. The mid-range target is to reduce 2016 GHG emission levels seven percent (7%) by 2030. The long-range target is to reduce 2016 GHG emission levels forty-three percent (43%) by 2061. These goals are moderately aggressive compared to other targets set by jurisdictions throughout the state. It is recommended that Sunrise routinely update the GHG Inventory at least every three to five (3-5) years.

The SAP Capital Project Recommendations Memo identifies the cost of implementation of such projects over ten years would equal an estimated $1.6 million and would provide for an estimated $3 million dollars in savings. Projects which provide a clear immediate return include: existing building commissioning, conversion of street / exterior lighting to LED, and increasing the fuel economy of the municipal fleet. Further, the SROI Analysis confirms projects such as existing municipal building commissioning, installation of solar photovoltaic systems on municipal buildings, and the installation of solar hot water systems (on the Natural Gas Utility Building) have a positive SROI which will provide net financial, economic, and environmental impacts.



Other Resource Management Conclusions:

Resource Management Analyses	Categories	Totals
GHG Emission Inventory (2016 Base Year)	Community-wide Emissions	1,318,300 $MTCO_2e$
	LGOP Emissions	46,134 $MTCO_2e$
GHG Emission Forecast (15-Years Starting with 2016)	Community-wide Emissions	12% Increase in GHG Emissions
	LGOP Emissions	12% Increase in GHG Emissions
Resource Baseline Assessment (2016 Usage)	Electricity	3,340,000 MMBTU
	Natural Gas	521,000,000 MMBTU
	Water	5.3 Billion Gallons
	Fleet Fuel	616,807 GGE
	Waste	2,600 lbs/household

By implementing various "Sustainability" and "Energy" SAP Goals and Recommendations Sunrise will positively impact resource management and reduce GHG emissions. The City can move away from fossil fuel reliance by implementing RM-1.1 and RM-1.2, which calls for a renewable energy feasibility study for all City buildings and applying a solar photovoltaic system to the Natural Gas Utility Building. Increased water conservation can be achieved through S-1.1 and S-1.2, which recommends incentivizing high efficiency water fixtures and low water landscaping systems, as well as upgrading fixtures at all major City facilities to low-flow devices by auditing systems and creating a schedule for replacement.

The SAP Goals and Recommendations suggest the Sunrise should support the increased use of alternatively fueled vehicles by the City and Community. This goal can be implemented in the community with a "needs assessment" for charging stations throughout the City to identify potential locations in commercial, multi-family residential, and mixed-use areas where charging stations could be utilized (RM-2.2). Sustainability of the City fleet can be improved using a "Right-Size" vehicle fleet analysis with increased fuel economy to determine the most optimal mix of pooled, sized, and assigned vehicles for City staff which is recommendation RM-2.3.

Waste generated in Sunrise can be reduced by partnering with business stakeholders to promote sustainable products in certain industries such as biodegradable straws, bags, packaging and containers which is recommendation RM-3.6. The SAP Sustainability Goal 5 sets a new recycling standard for Sunrise, it suggests a solid waste recycling rate goal of 40% or greater by 2025 for municipal, residential, and commercial sectors.

The following page contains a detailed matrix regarding the various SAP Goals and Recommendations designed for the Resource Management Focus Area.

h. Sunrise SAP Resource Management Goals and Recommendations

Resource Management							
Identifier	**Target for Implementation**	**Description**	**STAR-Identifier**	**RCAP Relationship**	**SAB or Public Comment**	**Departmental Relationship**	**Implementation Strategy**
Goal 1		***Promote renewable energy opportunities for City facilities, residential and commercial property owners.***		EF-1	Yes		
RM-1.1	1	Complete a renewable energy feasibility study for all City buildings and facilities establishing a specific goal for the City's power mix with an analysis of use during emergency and disaster management.		EF-5, RR-12	Yes	Sustainability/Capital Projects	Initiative through Sustainability
RM-1.2	3	Complete a capital project for a solar photovoltaic system for the Natural Gas Utility Building of an approximately 150 kilowatt system.				Sustainability/Capital Projects	Initiative through Sustainability
RM-1.3	1	Create website materials about solar incentives, programs and net-metering opportunities into a compiled "fast track solar" initiative.	CE-3	EF-4		Sustainability	Initiative through Sustainability
RM-1.4	2	Review LDC to eliminate unnecessary obstacles for renewable energy generation and create incentives to encourage it (appropriately sized and sited: hydrogen, solar energy, geothermal energy, bioenergy, and wind energy projects or facilities). Develop incentives for community choice aggregation or community shared solar to expand residential and commercial solar opportunities	CE-3	EF-4, EF-6, EF-8	Yes	Sustainability/ Community Development	Ensure LDC facilitates development of renewable energy and specifically aggregated solar at the neighborhood level.

		(Florida Solar United Neighbors program through League of Women Voters).					
RM-1.5	2	Create a policy to ensure that the local government's energy supplies increasingly come from renewable sources.	CE-6		Yes	Sustainability	Initiative through Sustainability
RM-1.6	2	Develop incentives for residential and commercial solar installations such as streamlined permitting or other appropriate methods.		EF-4, EF-5		Sustainability/ Community Development	LDC
RM-1.7	3	Complete solar thermal project to reduce annual energy consumption for water heating in Fire Stations 39, 59, 83 and 92, the Public Safety Complex (which includes Fire Station 72), and the 777 Sawgrass facility by 85% annually.				Sustainability/Capital Projects	Initiative through Sustainability
Goal 2		***Support the increased use of alternatively fueled vehicles by the City and Community.***					
RM-2.1	2	Implement actions that are intended to transition the community towards the use of low-emissions vehicles (including, but not limited to, zoning/land use incentives to promote charging stations, use of compressed natural gas and biofuels and preferential parking).	CE-2	EF-12	Yes	Sustainability/ Community Development	Initiative through Sustainability
RM-2.2	2	Develop needs assessment on charging stations throughout the City particularly on commercial (office/industrial or other), rental and condominium properties.		EF-12	Yes	Sustainability/ Community Development	Initiative through Sustainability

RM-2.3	2	Complete a Right-Size vehicle fleet analysis with increased fuel economy (and acquisition plan) to determine the most optimal mix of pooled, sized and assigned vehicle with most efficient fuel sources. Seven (7) or more years of age should be a considered vehicle replacement standard. Ensure technician training and the installation of electric vehicle support equipment (EVSE) are considered.		EF-10	Yes	Sustainability/Fleet Division	Acquisition Plan to be integrated into capital decisions and procurement requirements.
Goal 3		***Demonstrate progress towards City facilities Greenhouse Gas Reduction goals of 1/2% annual reduction to 2030 (7% from 2016 baseline) and 1% annual reduction to 2060 (43% from 2016 baseline).***	CE-2 & EJ-2	PP-1, PP-7, ST-17			
RM-3.1	5	Conduct a communitywide GHG Inventory at least every five years.	CE-2			Sustainability	Initiative through Sustainability
RM-3.2	2	Create an education and outreach campaign to engage residents and businesses in GHG reduction efforts and available energy incentives to do their part.	CE-2			Sustainability	Initiative through Sustainability
RM-3.3	2	Track and report on energy efficiency retrofits for City buildings, facilities and infrastructure.			Yes	Sustainability/Utilities	Initiative through Sustainability/Utilities
RM-3.4	1	Require public infrastructure projects incorporate elements of efficiency for energy and water consumption in new or upgraded infrastructure investments.	CE-6			Sustainability/Utilities	Procurement Policy updates
RM-3.5	2	Develop or financially support infrastructure operators' participation in training programs on	CE-6		Yes	Sustainability/Utilities	Initiative through Sustainability/Utilities

		energy and water efficiency techniques.					
RM-3.6	1	Enhance GHG data collection as follows: • Track fugitive emissions from HVAC and fire suppression equipment • Track generator run times and fuel consumption to measure performance and improve GHG emissions estimates • Track actual facility waste generation (weigh containers at each pickup) in order to assess waste generation/diversion trends • Develop a tracking system for fleet data that allows the user to filter vehicles by department and type. Track / calculate vehicle miles travelled, fuel economy, maintenance expenditure and fuel expenditure by vehicle		Similar to CC-5		Sustainability/Utilities	Initiative through Sustainability/Utilities
Goal 4		***Upgrade data collection to better manage future emissions, energy (and water use) tracking.***		PP-7			
RM-4.1	5	Increase sub-metering from specific infrastructure systems to collect better information on energy and water use.	CE-6			Sustainability/Utilities	Initiative through Sustainability/Utilities

RM-4.2	3	Implement a capital project to create and maintain a centralized database (Utility Management System) to collect and track key sustainability indicators to facilitate sustainability and energy reporting, management of programs, and assessment of performance. Other elements of a successful data management system would include: common nomenclature; crosslinking facilities with energy, water, and waste accounts; normalizing data using factors that correlate with changes in performance; and, a system for periodic reporting from various city departments.				Sustainability/Utilities	Initiative through Sustainability/Utilities
Goal 5		***Transition City operations, residents and business owners to more energy efficient buildings.***		EF-2 & PP-1			
RM-5.1	1	Develop website materials for the Low-Income Home Energy Assistance Program ("LIHEAP") and Weatherization Assistance programs to target low income households become more energy efficient.	CE-4	EF-3		Sustainability	Initiative through Sustainability
RM-5.2	1	Ensure all new City buildings and substantial renovations meet energy and sustainable construction standards in Section 255.2575, Florida Statutes.	CE-4	ST-8	Yes	Sustainability/Utilities	Policy through Utilities

RM-5.3	2	Complete a capital project to commission all existing City buildings. Incorporate Existing Building Commissioning ("EBCx") and recommissioning strategies to ensure high levels of building performance and improvement where possible. In particular, incorporate occupancy sensors in all City facilities where feasible.				Sustainability/Utilities	Policy through Utilities
RM-5.4	3	Consistent with the Florida Building and Broward County Codes, increase energy efficiency requirements in LDC for residential and commercial construction through an outreach effort to determine best incentives, approaches and case studies. Encourage increasing energy efficiency attributes of repurposed buildings.	CE-4	ST-8	Yes	Sustainability/Community Development	LDC
RM-5.5	2	Create outreach campaign on how residents and business owners can implement simple solutions to become more energy efficient and save on power bills.		EF-3	Yes	Sustainability	Initiative through Sustainability
RM-5.6	3	Consistent with the Florida Building and Broward County Codes, determine feasibility of LDC changes to promote cooler roof system with reflective coating materials.		ST-8		Sustainability/Community Development	LDC
RM-5.7	4	Complete capital project to convert street / exterior lighting to LED including existing High Pressure Sodium (HPS) street light fixtures.				Sustainability/Capital Projects	Initiative through Sustainability
RM-5.8	1	Better educate City staff on "no idling policy" with information about harmful impact of idling. Encourage City Employees to carpool.				Sustainability	Initiative through Sustainability

ii. Vulnerability

The Vulnerability Analysis ("VA") is a high-level resiliency analysis of Sunrise based on existing and available data. The VA identifies municipal facilities, assets, capital improvement projects, roads, wastewater treatment plants, emergency operation centers, hospitals, and assisted living facilities that could be exposed to climate change related events such as flooding. It should be clarified that these facilities are not all owned and controlled by Sunrise, but they are important facilities and services to consider.

The VA includes recommendations for proactive actions and informative development to avoid later measures to correct infrastructure impacts after an event. A main component of the assessment relates to the need for improved data management for better informed decision making.

a. Sunrise Vulnerability Analysis

1. Methods and Approach

The first step in developing the VA was a compilation of existing geo-spatial and tabular data sets. The extensive data inventory of Sunrise infrastructure provided by the Sunrise GIS Department included: stormwater basins, stormwater pump stations, fire stations, wastewater treatment plants, assisted living facilities, capital improvement projects, city-owned facilities, emergency operations and care facilities, parks, schools, and streets. The approach also included:

- Characterization of Sunrise's stormwater relationship to the regional system and potential future sea-level rise impacts;
- Expected future flood risk and assumptions stemming from predicted precipitation patterns;
- Potential strategies for future monitoring of regional water supply impacts from saltwater intrusion;
- Identification of existing Sunrise owned and other critical buildings, assets and facilities within Special Flood Hazard Areas ("SFHA") to show priorities for further risk inquiry;
- Sunrise's current efforts related to stormwater management and floodplain policy;
- Identification of road segments within SFHAs; and,
- Recent efforts to identify the status of stormwater features, by Basin, that may require retrofits or further analysis.

The VA is data-driven, but it also acknowledges the limitations of available data. As a result, the VA also includes numerous recommendations for: future data collection; mechanisms to consolidate data, or make its use more practical; and, areas where Sunrise should monitor forthcoming information or coordinate with other agencies for a more holistic response. Proactive approaches to resiliency planning are also outlined throughout.

2. Key Findings of the Vulnerability Analysis

The VA is a fairly data-intensive document with numerous graphics, maps and lists identifying the risk exposure of specifically identified facilities, please see **Appendix B**. For more information regarding specific roads, facilities or assets, please see Appendix B.

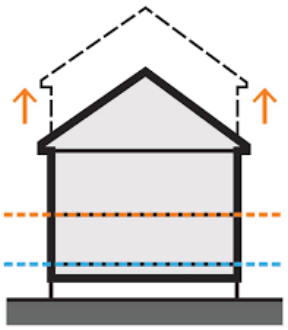
Climate and Sea-level Rise data. Climate change and resiliency data to support future decision-making related to impacts requires consideration of increased water stresses associated with a greater likelihood of high intensity rainfall events that can cause damaging floods as well as the potential for increased drought. The extremes will become more extreme. Sunrise should continue to engage in cooperative data exchange with Broward County and monitor updates to sea-level rise projections from the Compact or other relevant agencies such as NOAA or the U.S. Army Corps of Engineers.

Other data and monitoring. Given that it is widely expected that sea-level rise will eventually elevate the regional groundwater table throughout much of Broward County, Sunrise should continue to monitor new data about the relationship between an elevated groundwater table and the reduction of overall groundwater storage capacity. This relationship could increase the surface runoff potential from given storm events in areas that may or may not impact Sunrise. But it is an issue for further inspection.

Stormwater. The VA recommends planning efforts to mitigate potential flood risks for finished floor elevations that could be impacted by 25-year and 100-year 3-day storm events. A future conditions hydrological analysis should also be incorporated into future updates of the Sunrise's Storm Drainage Master Plan. Sunrise should also consider relevant opportunities to improve its score in FEMA's CRS program through the pursuit of climate, future conditions, and sea-level rise activities and credits. In doing so, Sunrise should evaluate the administrative costs associated with pursuit of these additional credits against the insurance premium reductions that will accrue for the 4,641 Sunrise property owners who currently hold flood insurance policies through the National Flood Insurance Program.

Finally, ongoing and enhanced coordination with the SFWMD is critical to address efforts related to sea-level rise impacts on coastal structures upon which Sunrise's drainage capacity is dependent.

Facilities and Assets. Critical facilities and Sunrise's municipal assets within the SFHA are at a potential risk of losing function during and after a flood event and should receive more thorough review to mitigate loss of function. But under the scope for the SAP, such detailed analysis was not possible at this time. This SAP recommends that all facilities, municipal and critical, receive site level investigation using survey quality elevation data and engineering assessments of resistance to floodwater as a critical next step to determine present and future vulnerability of facilities within the SFHA. Finally, a GIS inventory of finished-floor elevation data for all critical and city-owned facilities that are within the SFHA could be helpful for future decision-making. It should be clear that while



recognizing not all of the critical facilities analyzed are owned and operated by Sunrise, there are times when there may be significant reliance on them by the community, especially during weather events.

Roads. While Sunrise may not control every roadway, facility referenced in the analysis, it is important to maintain an understanding of where potential risks are from future flooding scenarios to maintain critical access. Where appropriate, this may necessitate coordination with Florida Department of Transportation District 4, Transportation Planning Organization, Broward County or jurisdictions that are responsible for certain roadway systems. As outlined, detailed elevation data for road centers and crowns was not available for this assessment, but survey grade-elevation data of impacted roads, specifically for the Sawgrass Expressway Ramp segments, and roads that feed into that network, provide the next step to determine enhanced accuracy of site level flood vulnerability.

Water supply. Further monitoring and investigation of potential saltwater intrusion into Sunrise's groundwater supply would not be warranted at this time because of the western location of Sunrise's wellfields.

b. Vulnerability Conclusions

The SAP Vulnerability Goals and Recommendations have been developed based on the results of the VA. The Goals and Recommendations in this Focus Area represent the groundwork for future resiliency planning and development within the City. A large portion of the Vulnerability recommendations relate to the collection and management of important data. Further characterization of the vulnerability of critical assets and facilities within Sunrise will arm City decision makers with the information necessary to prepare the community for extreme weather events and adaptation planning.

Various recommendations under Vulnerability Goal 1 suggest further data collection, V-1.1 provides municipal and critical facilities within the 100-year floodplain should receive site specific investigations regarding base floor elevation and engineering assessments, this data can be integrated in a GIS management tool so it can be easily accessed and readily available in emergency situations. This analysis will ensure access to critical facilities – such as those which house first responders – will not be impeded in emergency flooding situations, and locations used as evacuation shelters are built to stringent standards to protect human life (V-1.4).

The Vulnerability Goals and Recommendations also suggest Sunrise should continue to work with the SFWMD to address sea level rise impacts on costal structures and to understand the status and future of the drainage structures Sunrise primarily relies on (V-1.5). Sunrise should also continue to engage in the Compact's efforts to use new data (flood maps, groundwater maps, sea level rise projections, etc.) for proactive resiliency planning (V-1.7). Lastly, an important element of the Goals and Recommendations in this section relate to education and outreach for Sunrise citizens; V-3.1 directly addresses increased awareness of natural or man-made hazards through outreach materials including vulnerable populations and accounting for communications in languages other than English.

The following page contains a detailed matrix regarding the various SAP Goals and Recommendations designed for the Vulnerability Focus Area.

c. Sunrise SAP Vulnerability Goals and Recommendations

Vulnerability							
Identifier	**Target for Implementation**	**Description**	**STAR-Identifier**	**RCAP Relationship**	**SAB or Public Comment**	**Departmental Relationship**	**Implementation Strategy**
Goal 1		***Better understand any risks associated with City and Critical facilities and infrastructure and improve facilities and infrastructure throughout the community to be better prepared for climate change threats.***	CE-1	ER-2, PP-1 & PP-7			
V-1.1	3	Facilities, municipal and critical, within the SFHA should receive site level investigation using survey quality elevation data and engineering assessments of resistance to floodwater as a critical next step to determine present and future vulnerability of facilities within the SFHA. Integration into a GIS management tool could be helpful for future use of this data.		RR-1, WS-5	Yes	Sustainability/Public Works/Community Development/Utilities	Analysis through Public Works
V-1.2	3	Develop and integrate first floor elevation information within building footprints and include in a GIS-ready format for City facilities (and critical non-City owned facilities and assets).		RR-1	Yes	Sustainability/Public Works/Community Development	Analysis through Public Works
V-1.3	3	Analyze elevation data for surrounding roads for City and critical at-risk facilities to determine impacts from future conditions.		RR-6, ST-3	Yes	Sustainability/Public Works/Community Development	Analysis through Public Works
V-1.4	1	Ensure locally-owned public facilities that will be used as shelters, command centers, and	HS-6		Yes	Sustainability/Public Works/Community Development	Analysis through Public Works

		demonstration areas to meet the highest risk standards for new construction or substantial renovations.					
V-1.5	1	Coordinate with the South Florida Water Management District ("SFWMD") to address efforts related to sea level rise impacts on coastal structures upon which Sunrise's drainage capacity is linked.		CC-3		Sustainability/Public Works	Initiative of Public Works
V-1.6	1	Continue monitoring of potential saltwater intrusion into Sunrise's groundwater supply.		PP-3, WS-4		Sustainability/Utilities	Initiative of Utilities
V-1.7	1	Continue participation in SE Regional Climate Compact initiatives and incorporate new data, such as updated sea level rise projections, into future decision-making.		CC-2, PP-3		Sustainability/Utilities	Initiative through Sustainability
V-1.8	1	Inventory at risk elderly, homeless or other populations who are residing in facilities that may not have auxiliary power through natural gas or diesel generators and ensure they are complying with state statutes.					Initiative through Sustainability
V-1.9	1	Inventory critical water and wastewater treatment plants and ensure adequate auxiliary power, chemical and mechanic spare resources are available to ensure City has the capability to operate and produce water and treat and dispose wastewater in accordance with State Statutes.					Initiative through Sustainability
Goal 2		***Incorporate resiliency considerations into policies, codes and land use decision-making.***		PP-1, RR-11			

V-2.1	3	Enhance pre-disaster and post-disaster debris management activities to increase clearing and decrease obstruction after storm events including permit streamlining and debris mulching opportunities for residents and City facilities.			Yes	Sustainability/Public Works	Initiative through Sustainability and Public Works
V-2.2	2	Develop and report on metrics for measuring the success of adaptation actions to prepare for a changing climate.	CE-1	RR-1		Sustainability/Public Works	Initiative through Sustainability and Public Works
Goal 3		***Create educational and outreach opportunities for residents and business owners to better understand weather and climate related risks and how to reduce vulnerabilities to them.***		PP-7 & PP-8			
V-3.1	1	Increase community awareness of natural or man-made hazards through education and outreach materials including vulnerable populations and accounting for communications in languages other than English.	HS-6	RR-10	Yes	Sustainability/Public Works/Citywide	Initiative through Sustainability
Goal 4		***Link vulnerability planning efforts with existing initiatives such as the Community Rating System and Stormwater planning.***					
V-4.1	2	Enhance public outreach activities that can improve future Community Rating System cycle reviews that focus on flood risk and FEMA mapping.		RR-5, RR-10	Yes	Sustainability/Public Works/Community Development	Initiative through Sustainability and Floodplain Manager

V-4.2	2	Evaluate the administrative costs associated with pursuit of additional "future conditions" credits in the Community Rating System against the insurance premium reductions that will accrue to the approximately 4,500 property owners who currently hold flood insurance policies through the National Flood Insurance Program. If the benefits outweigh the costs, the City should consider pursuing these credits in the Community Rating System program.		RR-5	Yes	Sustainability/Public Works/Community Development	Initiative through Sustainability and Floodplain Manager
V-4.3	1	Build upon future updates of the Sunrise's Stormwater Master Plan and emergency management plans which should include regionally accepted modeling parameters that identify future conditions under which the stormwater system is expected to operate including future precipitation and sea level rise conditions.		RR-1, RR-2, RR-3, WS-7, WS-8		Sustainability/Public Works	Initiative through Sustainability and Public Works

iii. Sustainability

a. Sustainability Tools for Assessing and Rating Communities

The STAR Community Rating System™ is the nation's leading comprehensive framework and certification program for evaluating local sustainability indicators, encompassing economic, environmental, and social performance measures. STAR was created in 2012, by local governments, for local governments as a tool to define community-wide sustainability and to discover how communities can become more healthy, inclusive, and prosperous across seven (7) goal areas.[lv] STAR is now available in a 2.0 Version released in 2016.[lvi] To date, approximately seventy (70) communities across the U.S. have become STAR Certified.

Examples in Florida include:

- Monroe County (3-STAR),
- Broward County (4-STAR), and
- the City of West Palm Beach (4-STAR).

Primarily, STAR serves as a common framework that is becoming increasingly popular among local governments to gauge the commitment on sustainability issues. It provides a level of comparison among local governments that undertake the evaluation process whether they become certified or not. Third, it provides a very holistic source to glean new ideas for recommendations on how to increase sustainability strategies. Finally, it provides a strong quantitative way to communicate about efforts to date and opportunities to prioritize.

The seven (7) STAR goal areas:

- Built Environment;
- Climate & Energy;
- Economy & Jobs;
- Education, Arts, & Community;
- Equity & Empowerment;
- Health & Safety;
- Natural Systems; and
- Innovation & Process (bonus).

PHOTO: STAR COMMUNITY RATING SYSTEM

Each of the goal areas are broken down into more detailed objectives, outcomes and local actions, each of which are used to assess how well Sunrise is doing within a given goal area. A Project Management and Calculator tool is used to enter in data and determine scores within the goal areas (known as the "Crosswalk"). Over 12,000 cells of information can be entered on the Crosswalk. Local governments use the framework to assess current conditions and determine which of these goal areas they are performing well in and where improvements are needed. The framework provides very specific metrics that municipalities can follow to determine the best practices for them to utilize. The framework can also be used to develop recommendations to help local governments achieve a higher STAR rating upon future certifications.

Built Environment	Climate & Energy	Economy & Jobs	Education, Arts, & Community	Equity & Empowerment	Health & Safety	Natural Systems	Innovation & Process
BE-1: Ambient Noise & Light	CE-1: Climate Adaptation	EJ-1: Business Retention & Development	EAC-1: Arts & Culture	EE-1: Civic Engagement	HS-1: Active Living	NS-1: Green Infrastructure	IP-1: Best Practices & Processes
BE-2: Community Water Systems	CE-2: Greenhouse Gas Mitigation	EJ-2: Green Market Development	EAC-2: Community Cohesion	EE-2: Civil & Human Rights	HS-2: Community Health	NS-2: Biodiversity & Invasive Species	IP-2: Exemplary Performance
BE-3: Compact & Complete Communities	CE-3: Greening the Energy Supply	EJ-3: Local Economy	EAC-3: Educational Opportunity & Attainment	EE-3: Environmental Justice	HS-3: Emergency Management & Response	NS-3: Natural Resource Protection	IP-3: Local Innovation
BE-4: Housing Affordability	CE-4: Energy Efficiency	EJ-4: Quality Jobs & Living Wages	EAC-4: Historic Preservation	EE-4: Equitable Services & Access	HS-4: Food Access & Nutrition	NS-4: Outdoor Air Quality	IP-4: Good Governance
BE-5: Infill & Redevelopment	CE-5: Water Efficiency	EJ-5: Targeted Industry Development	EAC-5: Social & Cultural Diversity	EE-5: Human Services	HS-5: Health Systems	NS-5: Water in the Environment	
BE-6: Public Parkland	CE-6: Local Government GHG & Resource Footprint	EJ-6: Workforce Readiness	EAC-6: Aging in the Community	EE-6: Poverty Prevention & Alleviation	HS-6: Hazard Mitigation	NS-6: Working Lands	
BE-7: Transportation Choices	CE-7: Waste Minimization				HS-7: Safe Communities		

b. STAR Preliminary Assessment Tools

Through Sunrise's efforts developing the SAP, the STAR framework was a natural fit for use as a tool to assess current sustainability initiatives and serve as a baseline for plan development. The STAR preliminary certification tools were utilized to collect data and information to determine where Sunrise falls within the STAR framework and to emphasize opportunities where the city can improve its Sustainability progress management. The full Sunrise STAR Crosswalk created by the Team can be found in **Appendix E**. Finally, a comprehensive list of all STAR Outcomes and Actions for which Sunrise has not currently achieved any points is provided in **Appendix H**.

The results of the Sunrise STAR "preliminary assessment" are provided below in ***Table 9*** (column four is the sum of columns two and three, and that column five is column four divided by total available points in each group). Sunrise received a three-star score using the STAR rating system.

Sunrise received its highest score in the Education, Arts & Community category largely due to the plethora of community events and education campaigns hosted by the City. The second highest score, in the Built Environment category, can be contributed to the recent update of the Stormwater Master Plan and recent efforts to improve bicycle lanes throughout the City.

A review of Sunrise's score already shows opportunities where it can increase sustainability efforts:

TABLE 9: SUNRISE STAR SCORE PRELIMINARY ASSESSMENT SUMMARY

Goal Area	Outcome Scores	Action Scores	Goal Area Score	Percentage Complete
Built Environment	**5.25**	**38.04**	**43.29**	**43.3%**
Climate & Energy	**0.00**	**24.63**	**24.63**	**24.6%**
Education, Arts & Community	**7.50**	**38.23**	**45.73**	**45.7%**
Equity & Empowerment	**0.00**	**31.79**	**31.79**	**31.8%**
Economy & Jobs	**14.25**	**24.91**	**39.16**	**39.2%**
Health & Safety	**10.75**	**27.19**	**37.94**	**37.9%**
Natural Systems	**15.00**	**25.81**	**40.81**	**40.8%**
Innovation & Process	**N/A**	**N/A**	**0.00**	**0.0%**
Total			**263.34**	**35.1%**

The STAR framework does have a process for "certification."[lvii] This entails submittal of the overall Crosswalk spreadsheet for review by STAR staff. Generally, the process entails at least one follow-up to correct any deficiencies in the spreadsheet tracking, but ultimately the result is an actual peer reviewed certification that lasts 4 years (under Version 2.0). There are 3 ultimate certification levels: 3, 4 and 5. Point totals are as follows:

1. **3 STAR Community** **250-449**
2. 4 STAR Community 450-649
3. 5 STAR Community 650+

Should Sunrise decide to undertake the certification process, significant effort would be necessary to verify and provide updated links or information in preparation for the review process, which is significant. At times, points can be lost during the certification process due to inadequate data support or simply a determination that the criteria aren't met, so it is critical to provide the most robust and recent support information possible. The list serves as a starting point for any future attempts to gain uncaptured STAR points so that Sunrise may increase its STAR score (detailed matrices with Sunrise's STAR point awards and shortfalls is contained in **Appendix E** "Sunrise STAR Crosswalk" and **Appendix H** "Sunrise STAR Points Not Yet Achieved").

c. Sustainability Conclusions

Sunrise received a 3-star score using the preliminary assessment tools. Significant data regarding City operations and community-wide sustainability was collected and analyzed using the STAR preliminary assessment tools, the SAP Sustainability Goals and Recommendations are largely derived from STAR Outcomes and Actions. Moving forward, the STAR Outcomes and Actions where the City did not receive points in the preliminary assessment were analyzed for their: 1) applicability to Sunrise, and 2) feasibility for inclusion into the SAP Sustainability Goals and Recommendations. The Team also reviewed previous SAB recommendations to look for linkages to data and initiatives to carry forward in this planning effort.

A few key observations regarding the STAR Scoring Summary:

- Data tracking is important to measure progress on sustainability initiatives. For example, to achieve points in a certain area, usually the protocol requires multiple years of data to examine trends. Data management then has a dual benefit: 1) to improve STAR scoring and 2) to measure progress over time.
- Sunrise is beginning to drive its sustainability initiatives so there is room for improvement, particularly in the Climate & Energy goal area (for which this entire sustainability planning process is likely to increase the score).
- The Innovation & Process Goal Area is particularly difficult to achieve points in due to significant documentation requirements to establish progress on actions. Essentially, this is a request to establish points in area that is new and unique either not covered by the framework itself or serving a particular jurisdiction.

As mentioned above, the entire SAP planning process will help improve Sunrise's STAR score due to the fact that the Sunrise now has a baseline understanding of resource use and city vulnerability. Immediately moving forward, the Sunrise should begin an annual reporting process to track the implementation of the SAP Goals and Recommendations so that there will be a library of comprehensive data surrounding resource management, vulnerability, and sustainability (S-4.5).

Sustainability Goals and Recommendations largely derived from STAR include but are not limited to the following: S-6.3 which suggests adoption of light pollution standards, S-6.4 identification of strategies to promote location appropriate urban agriculture and community gardening, and S-7.4 the establishment to a community-wide bike share program. Implementation of the SAP Goals and Recommendations will increase Sunrise's STAR score which in turn will make Sunrise a desired community to live in and improve quality of life for citizens.

The following page contains a detailed matrix regarding the various SAP Goals and Recommendations designed for the Sustainability Focus Area.

d. Sunrise SAP Sustainability Goals and Recommendations

Sustainability							
Identifier	**Target for Implementation**	**Description**	**STAR-Identifier**	**RCAP Relationship**	**SAB Or Public Comment**	**Departmental Relationship**	**Implementation Strategy**
Goal 1		***Protect water and air resources promoting the highest efficiency and quality standards.***					
S-1.1	2	Adopt a goal of reducing the City's annual water consumption by 39% by 2022. Complete a capital project of systematically upgrading fixtures at all major City facilities to low-flow devices upcoming major renovations with fixtures in remaining facilities to be audited and a schedule for replacement developed. Finally, develop a design standard for water fixtures in City facilities.				Sustainability/Utilities	Policy through Utilities
S-1.2	3	Review the Land Development Code (LDC) for opportunities to encourage high efficiency water fixtures and landscaping systems in new construction and renovations while considering impacts to commercial and residential property owners.	CE-5			Sustainability/Community Development/Utilities	LDC
S-1.3	2	Enhance promotion of the City's water conservation opportunities to the residential, renter and business sector.	CE-5			Sustainability/Utilities	Policy through Utilities
S-1.4	3	Review the LDC to determine if any barriers exist to allow rainwater harvesting and eliminate them; as well as promote criteria for rainwater harvesting and cisterns and also provide educational materials for their use.			Yes	Sustainability/Community Development/Utilities	LDC
S-1.5	2	While Air pollution standards are monitored countywide, to maintain and enhance air quality, develop methods to improve the City's dust control including asphalt treatments for roads, shoulders, alleys and city-owned parking lots. This should also include trespass prevention and			Yes	Sustainability/Community Development/Public Works	Policy through Public Works and/or Community Development

		dust controls for City lands such as undeveloped parks and other vacant land reduce dust emissions. Code provisions related to dust control and prevention related to private property should be reviewed and enhanced if necessary.					
S-1.6	3	Link air quality to other sustainability education and outreach efforts such as those related to greenhouse gas emissions reductions, land use decisions that promote sustainable design standards and alternative transportation strategies.			Yes	Sustainability	Initiative through Sustainability
S-1.7	2	Monitor City's irrigation accounts, review largest users and investigate potential leaks.				Sustainability/Utilities	Policy through Utilities
S-1.8	3	Offer rain shut off devices, low flush showerheads and aerators to residents to reduce water use.				Sustainability/Utilities	Policy through Utilities
Goal 2		***Promote protection of natural resources and foster recreational opportunities in natural areas.***					
S-2.1	1	As part of the City's existing initiatives, and building upon them, analyze tree canopy, undertake a tree inventory to establish a tree canopy goal focusing on mitigating heat island effect accounting for storm events that may reduce canopy through natural forces.	CE-4, NS-1 & NS-4	NS-1, NS-14, PH-4, ST-15		Sustainability/Public Works/Community Development	Comprehensive Plan
S-2.2	2	In the City's inventory of access to parks, recreation, and open space areas, collect data on distance of housing units within a 1⁄2-mile walk, run or ride distance of a public park and relationship to population density to promote the following goals (similar to 1/4-mile standard in Local Activity Centers): • High or Intermediate-High: 85% or greater of housing units within a 1/2 mile walk of a public park • Intermediate-Low or Low: 70% or greater of	BE-6			Sustainability/Capital Projects/Community Development	Comprehensive Plan

		housing units within a 1/2 mile walk of a public park.					
S-2.3	3	Improve neighborhood connectivity (through private or public lands) by having connecting sidewalks and multi-use paths which lead to City parks.			Yes	Sustainability/Community Development/Public Works	Implementation through Bicycle & Pedestrian Master Plan
S-2.4	2	With input from South Florida Regional Planning Council (SFRPC), Broward County and South Florida Water Management District (SFWMD), identify green infrastructure opportunities to retain stormwater and improve water quality and incorporate green infrastructure features into the Stormwater Master Plan and/or pertinent LDC sections such as bioswales and permeable pavers and include signage for education.	NS-1	NS-10, WS-11	Yes	Sustainability/Public Works/Community Development	Policy through Utilities (for City and Right-of Ways)/CDD (for private)
S-2.5	2	Inform residents and/or plant or animal sellers about the benefits of native species and the hazards of invasive species, promoting at events such as tree giveaways.	NS-2	AG-9	Yes	Sustainability/Leisure Services	Policy through Leisure Services
S-2.6	2	With concerns over water quality in canals and lakes, and with most lakes being privately owned and maintained, increase efforts to provide education and promote limited fertilizer use such as through existing or enhanced NPDES or BMP program materials.			Yes	Sustainability/Utilities	Policy through Utilities
S-2.7	Long Term	Promote resiliency in water supply by expanding opportunities in alternative sources and continue expansion of the City's reclaimed water program to 2 MGD by 2022, 4 MGD by 2030 and 8 MGD by 2050.		PP-3, WS-3	Yes	Sustainability/Utilities	Policy through Utilities
Goal 3		***Enhance engagement with the business sector on sustainability issues.***		ER-1			
S-3.1	5	Track increased number of business establishments in the jurisdiction over time from a 2016 baseline.	EJ-1			Sustainability/Community Development	Finance Department initiative

S-3.2	3	Create programs that directly help businesses transition to new green practices and implement a green business promotion program.	EJ-2			Sustainability/Finance Department	Initiative through Sustainability
S-3.3	2	Create or support promotional campaigns to bank locally, buy locally, or buy from small and independent businesses and retailers.	EJ-3	AG-3		Sustainability	Policy for Economic Development
S-3.4	3	Promote purchasing preferences for locally produced goods and services in the local government and anchor institutions.	EJ-3			Sustainability/Purchasing Department	Policy for Economic Development
S-3.5	3	Develop partnership for promoting employee commuting with large employers and develop streamlined effort for tracking results and sharing information with the City.			Yes	Sustainability/Finance Department	Initiative through Sustainability
S-3.6	2	Promote use of more sustainable products in certain industries such as biodegradable straws, bags, packaging and containers.				Sustainability	Initiative through Sustainability
S-3.7	2	Discuss City's vulnerability strategies to avoid business disruption due to floods, weather events and disasters (promoting incorporation of City's data into recovery plans).		ER-5, RR-14		Sustainability/Public Works	Initiative through Sustainability
S-3.8	2	Coordinate with the Greater Sunrise Chamber of Commerce to determine if opportunities exist for City to assist in waste oil reduction through consolidated pickup and hauling services.			Yes	Sustainability/Finance/ Sanitation Manager	Initiative through Sustainability and Sanitation Manager
Goal 4		***Create an ethic for Sunrise to lead by example by implementing sustainability principles and telling its story to the community.***		PP-1			
S-4.1	1	Create environmentally preferable purchasing for local government procurement of safe, healthy, and environmentally responsible products.	EJ-2		Yes	Sustainability/ Procurement	Policy for Procurement
S-4.2	1	Continue dialogue on sustainability and energy efficiency goals for City operations with staff and leadership through quarterly or semi-annual internal workshops.		RR-15	Yes	Sustainability/City Management	Policy through City Management

S-4.3	1	Adopt inclusive public engagement guidelines for local government agencies and departments.	EE-1			Sustainability/Public Relations	Policy through City Management
S-4.4	2	Maintain existing policy for identification of sustainability attributes for capital projects in budget submittals.				Sustainability/Capital Projects	Policy through Finance
S-4.5	1	Create annual reporting process for Sustainability Action Plan before the City's budget cycle begins.				Sustainability	Policy through Finance
Goal 5		***Reduce solid waste in the municipal, residential and commercial sectors to achieve a solid waste recycling rate of 40% or greater by 2025 with a targeted focus on multi-family and commercial participation.***	BE-7		Yes		
S-5.1	2	Implement communitywide incentives and policies ensuring that residents and businesses are working toward community waste reductions targets.	BE-7			Sustainability/Finance/ Sanitation Manager	Initiative through Sustainability and Sanitation; Revise Policy in Comprehensive Plan
S-5.2	2	Explore opportunities with waste hauler and restaurant owners to create a shared composting program for food waste management.				Sustainability/Finance/ Sanitation Manager	Initiative through Sustainability and Sanitation
S-5.3	1	Collaborate with Chamber to reach business entities on importance of recycling and benefits to the community overall in increasing recycling rates with an emphasis on restaurants. Prepare educational materials (such as Collier County's) on restaurant-based recycling strategies and work with waste hauler to target distribution to largest enterprises and ensure availability of recycling containers for other waste materials.				Sustainability/Finance/ Sanitation Manager	Initiative through Sustainability and Sanitation

Goal 6		***Ensure land development decisions consider elements of sustainable design.***					
S-6.1	3	Review advanced parking strategies in transit-served areas and areas identified for compact, mixed-use or transit-oriented development such as adjusting parking ratios, location of parking structures, connectivity to other transportation modes and providing commuter benefits.	BE-3			Sustainability/Community Development	LDC
S-6.2	2	Review options for adopting light pollution standards such as model lighting policies from the International Dark Skies Association.			Yes	Sustainability/Community Development	LDC
S-6.3	3	Create a Sustainable Development Standards evaluation system and Manual (example: Pompano Beach).			Yes	Sustainability/Community Development	LDC
S-6.4	2	Identify strategies, research policies and limitations and encourage enabling location-appropriate urban agriculture and community gardening.		AG-8		Sustainability/Community Development	LDC
S-6.5	3	Evaluate strategies to use various fee structures encouraging sustainable construction standards consistent with law.			Yes	Sustainability/Community Development	Policy through Community Development-Planning
Goal 7		***Prioritize alternative transportation opportunities, increase connectivity of existing transportation systems, transit-oriented development and increase safety.***		ST-11			
S-7.1	3	Employ strategies to consider transit-oriented development, enhancing alternative transportation options and increasing connectivity between transportation modes to promote higher-density development capable of supporting more robust transit.		ST-10, ST-11, ST-18		Sustainability/Community Development	Comprehensive Plan

S-7.2	5	Demonstrate pedestrian and bicyclist fatalities or injuries from reckless driving are making incremental progress towards zero incidents by 2040. Progress can be facilitated by the City through further infrastructure improvements (additional bike lanes, or safety upgrades) and community outreach and education initiatives for bicycle and pedestrian safety.	BE-7			Sustainability/Police	Policy through Leisure Services
S-7.3	5	Increase the mileage of safety features for cycling and paths (which may include other agencies) including the use of medians or curbing, striped or buffered/marked bicycle lanes, cycle-tracks, parallel off-street paths and/or other dedicated facilities.	BE-7	ST-19	Yes	Sustainability/Leisure Services/Utilities (Public Works)/City Management	Comprehensive Plan
S-7.4	3	Establish or support a communitywide public bike share program.	BE-7	ST-19		Sustainability/Leisure Services	Policy or Project through Leisure Services
S-7.5	4	Achieve recognition as a Bicycle-Friendly Community or Walk-Friendly Community OR achieve an average community Walk Score or Bike Score of 70 or above.	HS-1	ST-19		Sustainability/Community Development/City Management	Policy or Project through Leisure Services
S-7.6	2	Promote multi-modal opportunities through more integrated education and outreach program and the City's Bicycle & Pedestrian Advisory Board.			Yes	Sustainability/Community Development	Implementation through Bicycle & Pedestrian Master Plan
S-7.7	2	Adopt the Pre-Tax Benefits Plan which allows City employees to purchase Broward County Transit 31-day bus passes with their existing gross income and the City provides a pre-tax deduction program for their transit costs.				Sustainability/Human Resources	Implementation through Human Resources Benefits policy
Goal 8		***Promote a Built Environment that ensures equity and access to sustainable housing opportunities.***					
S-8.1	4	Collaborate with other jurisdictions to address affordable housing and location efficiency needs in the region.	BE-4			Sustainability/City Management	Policy through Community Development-Planning

S-8.2	3	Use regulatory and design strategies to encourage compatible infill and redevelopment with a mix of housing types in neighborhoods close to employment centers, commercial areas, and where transit or transportation alternatives exist.	BE-5	ST-12		Sustainability/Community Development	LDC or Policy through Community Development-Planning
S-8.3	2	Target local infrastructure improvements to underserved and blighted areas and catalyze private reinvestment.	BE-5	ST-14		Sustainability/Community Development/Capital Projects	Policy through Community Development-Planning
Goal 9		***Strengthen community cohesion and enhance / create opportunities to improve artistic, diversity and cultural opportunities within Sunrise.***		PP-6			
S-9.1	2	Track participation and attendance at major community arts and cultural events, performances, festivals, and programs.	EAC-1			Sustainability/Leisure Services	Initiative through Leisure Services
S-9.2	2	Ensure that all major arts and cultural facilities owned and operated by the local government and at least half of all other major arts venues are fully accessible to people with disabilities.	EAC-1			Sustainability/Leisure Services	Initiative through Leisure Services
S-9.3	2	Collaborate with neighborhood associations, civic groups, and local service providers to identify and address neighborhood-specific needs with regard to vulnerability issues.	EAC-1	ER-9, RR-16, EQ-3		Sustainability/Public Works	Initiative through Sustainability and Public Works
S-9.4	5	Increase over time the annual number of (tracked through an inventory) eligible structures, sites, and landscapes designated as local historic landmarks, added to local historic districts, and/or rehabilitated, restored, or converted through adaptive reuse. Consider elevations and future risk in review process. Historic buildings include 50 years or greater as eligible historic properties.	EAC-4	ST-9		Sustainability/Leisure Services/Utilities (Public Works)/City Management	Initiative through Leisure Services

S-9.5	2	Develop informational signage in city facilities to educate visitors about sustainability actions taken and track sustainability education and outreach campaigns / activities, and their success and track sustainability training of new hires and existing employees.				Sustainability/Human Resources	Initiative through Sustainability
S-9.6	2	Develop partnership opportunities with Broward Public Schools Environmental Stewardship program to collaborate with City students on student activities.			Yes	Sustainability	Initiative through Sustainability
S-9.7	2	Strive to increase diversity in the public input components of the capital planning process- particularly for vulnerable populations.		EQ-4, ST-5		Sustainability/Capital Projects	Initiative through Sustainability and Capital Projects

D. Education and Outreach Activities

The goal of becoming a sustainable community can be attained when there is awareness on behalf of individual citizens and a shift in public attitude. While implementation of the SAP will be left up to Sunrise staff, the overall success of the plan hinges on public support and community awareness. The success of the SAP is dependent upon the participation of all residents, businesses, and institutions within Sunrise. The Sunrise community as a whole is familiar with sustainability, many residents have been actively engaged in sustainability, recycling, and conservation programs promoted on the *Good and Green* webpage.

Education and outreach strategies promote an understanding of civic processes and sustainable growth; forge a collaboration between Sunrise and its residents; and, encourages community stewardship.

The SAP outreach strategies include:

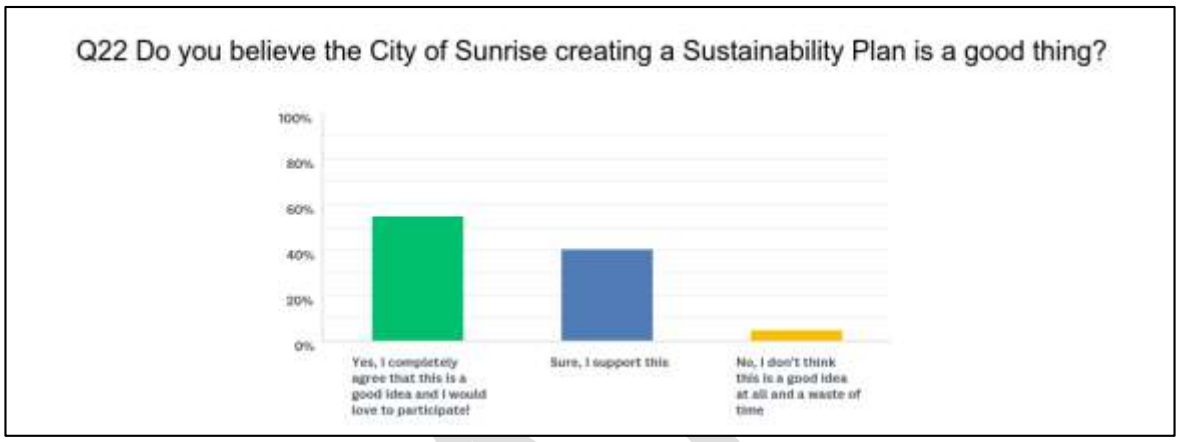
- Support increased awareness of sustainable concepts and resiliency practices through passive and active community outreach.
- Identification of opportunities to improve community sustainability.
- Understand current needs and desires of community residents.
- Motivate citizens to support SAP policy implementation.
- Highlighting community successes including in the business sector.
- Encourage a proactive government that responds to community needs and provides the necessary infrastructure for a high-performance community.

In creating the SAP, the Team engaged with Sunrise staff, residents, and business stakeholders. The outreach efforts involved a series of internal meetings with City staff and public meetings. For the community, the Team promoted the SAP and SAP Public Meetings to residents online and in print. The Team targeted the commercial sector by presenting to the local Chamber of Commerce and inviting Sunrise business stakeholders to a SAP briefing. The Team worked closely with the SAB, Bicycle & Pedestrian Advisory Board, the Department Leisure Services, the Community Development Department, and senior-level Sunrise staff during the creation of SAP goals and recommendations.

The SAP Public Meetings were promoted through:

- Print ads in the *Sun-Sentinel* and *Sawgrass Sun*;
- An announcement in the April-June issue of the City's *Horizons* magazine (mailed to 38,000+ homes);
- Multiple email newsletter blasts to the City's *Sunrise Source* (general interest) and *Good and Green* (sustainability-focused) lists*;*
- Regular posts to the Sunrise's Twitter, Facebook, and Instagram accounts;
- Content on Sunrise's *Good and Green* website; and,
- Sunrise Utility Customers received an insert with their April utility bill promoting the Second Public SAP meeting.

To effectively collaborate with residents, the Team prepared an online *Sunrise Sustainability Survey*. The Survey was used to capture the public's perception of Sunrise sustainability and to understand their aspirations for the future of their community. The Survey was promoted through social media and email blasts to over 1,800 Sunrise residents. We received over one hundred and seventy (170) responses to the online *Sunrise Sustainability Survey*. A shortened version of the Survey was distributed at the annual Sunrise Earth Day Festival on April 7, 2018. The event yielded over one hundred and fifty (150) survey responses.



A full version of the online *Sunrise Sustainability Survey* questions and results can be found in **Appendix I**. An analysis of the surveys collected online and at the Earth Day Festival provided the following conclusions:

(1) Sunrise residents support the City's efforts to become more sustainable;
(2) Sunrise residents believe Sunrise is making progress to towards becoming resilient and would like to know more about what is being done to decrease City vulnerability;
(3) Further outreach efforts should focus on resiliency education and demonstrating the role of local government in becoming a sustainable community; and,
(4) Sunrise residents strongly believe sustainability is important and specifically would like to see:
    a. A city-wide tree inventory,
    b. Expansion of City-wide recycling, and
    c. Incentives for green building techniques and use of renewable resources.

i. Public Engagement

On March 7, 2018, the Team kicked off the public outreach effort at the Greater Sunrise Chamber of Commerce networking breakfast. The event opened with Mayor Michael J. Ryan's State of the City Address, which described Sunrise's efforts to build resiliency in many ways, but namely, the City's multimodal capital improvement projects, rich community programs, and its public/ private partnership with business stakeholders in the community. The Team's presentation defined sustainable development opportunities for the commercial sector and the return on investment associated with green business practices. The Chamber also received an overview of the findings from the GHG Inventory and the Resource Baseline Assessment.

A SAB workshop was held on April 11, 2018, where the Team presented the outcomes of the GHG Inventory, resource management baseline, and VA. The attendee's engaged in a breakout session to generate ideas for specific sustainability strategies ideal for Sunrise. Staff volunteers facilitated the Sustainability, Resource Management, and Vulnerability breakout groups. The SAB members each applied their individualized expertise and perception to develop suitable recommendations for the SAP.

The First Public SAP Meeting was held on April 17, 2018 at Sunrise's Nob Hill Soccer Club House. Attendees included students, business owners, mothers, retirees, and longtime Sunrise residents. The Team utilized the meeting as an opportunity to educate the public on sustainable practices, resource conservation, and Sunrise vulnerability. After the presentation, the public was given an opportunity to provide their thoughts on the SAP findings and planning process. Attendees were largely interested in incentives for green energy savings programs and improving Sunrise drainage. Many of the residents expressed the need to better educate citizens on resiliency and sustainability practices in order to positively impact the community.

PHOTO: PUBLIC MEETING #1

The Team met with the SAB for a second time on May 23, 2018. The SAB was presented with the results of the *Sunrise Sustainability Survey*, an introduction to the eight (8) recommended SAP Capital Projects, and the SAP Goals and Recommendations. The SAB provided feedback on prioritization of the SAP Goals and Recommendations and suggested adding detail to a number of the SAP Goals and Recommendations. The Team provided the Bicycle & Pedestrian Advisory Board an opportunity to review and comment on the SAP goals and recommendations.

Corporate Sustainability Stewardship Case Study: Alligator Alley Harley-Davidson Dealership

The Alligator Alley Harley store has replaced all lighting fixtures with LEED standard light fixtures to conserve energy and cut down on energy costs. The improvement has decreased electric bill costs by 25 to 30%. Also, in the 67,000 square foot facility all AC receptacles and sensors have been moved to lower positions in the room to more accurately regulate the temperature of the building and cut down on the run-time of the equipment, which in effect decreases the need for maintenance and overall costs. The Alligator Alley Harley store also has various contracts with waste removal services to ensure materials like old batteries, tires, oil, and gas are properly disposed of. In some cases, like for old oil, materials can be recycled and have a resale market.

On May 24, 2018, the Team hosted a targeted outreach meeting for Sunrise business stakeholders at the Ikea Café. Many Sunrise businesses are already presently involved in their own sustainability efforts; company representatives had the opportunity to share their own corporate sustainability stories. The attendees included representatives from the Rick Case Honda Dealership, the Alligator Alley Harley-Davidson Store, Metropica, Ikea, HBO Latin America, the BB&T Center, Greater Sunrise Chamber of Commerce, and the Stiles Corporation. The presentation involved principals of corporate responsibility, the return on investment associated with commercial sustainability policies, and an introduction to the SAP planning effort. The Team invited the attendees to join Sunrise's sustainability movement and to build partnerships with Sunrise to achieve many of the SAP goals and recommendations.

PHOTO: SUNRISE BUSINESS STAKEHOLDER MEETING

The Second Public SAP Meeting was held on May 29, 2019 at the Nob Hill Soccer Club House. The meeting presentation included the results of the *Sunrise Sustainability Survey,* an overview of the SAP structure, and an introduction to the SAP Goals and Recommendations. The Sunrise residents attending the meeting and engaged in one of three breakout groups. In each breakout group, the residents were encouraged to discuss and provide feedback on the SAP Goals and Recommendations. The Team facilitated breakout groups, answered questions, and explained implementation strategies for many of the recommendations. The meeting was a forum for discussion; a group of residents shared stories about their own personal sustainability practices and had ideas for incorporation into the final SAP Goals and Recommendations.

Corporate Sustainability Stewardship Case Study: Ikea

Ikea, the Scandinavian retailer selling ready-to-assemble furniture, décor, and houseware, recognizes the value in corporate sustainability practices and has pursued a number of actions to eliminate use of environmentally harmful products. Ikea has one location within Sunrise and more than three hundred and sixty-three (363) stores worldwide. Ikea plans to set the example for other large firm businesses by eliminating environmentally harmful products sold to customers and used within its stores.

Ikea sustainability goals, by year 2020:

- Ikea plans to phase out all single-use plastic products from its stores, including plastic straws, plates, cups, freezer bags, bin bags, and plastic-coated paper plates and cups.
- Ikea plans to phase out oil-based plastics and is aiming to ensure all plastic products are made using recycled materials.
- Ikea is aiming for all store locations to rely on renewable energy for electricity and heat. The retailer has already invested in windfarms and has placed solar panels on a number of stores.

(Information adapted from: https://amp.theguardian.com/business/2018/jun/07/ikea-commits-to-phase-out-single-use-plastic-products-by-2020)

Finally, the SAP was available for a thirty-day public comment period through electronic and other means. The Team addressed those comments throughout the SAP and discussed several with key staff members. The City Commission was briefed on the SAP Draft document on (TBD) in a public meeting.

ii. Sunrise Staff Engagement

An Internal Department Briefing was held on March 28, 2018, for senior level Sunrise staff. The Team presented their data gathering efforts and the results from the GHG Inventories, Resource Baseline Assessment, GHG Forecast, STAR, and the VA. The presentation included around twenty (20) attendees and covered: reasons for creation and implementation of a SAP; results of the data collection; what we have learned so far from the data; and, how the data should be used moving forward. A written questionnaire was distributed so that Sunrise employees could provide suggestions for making Sunrise a more resilient and sustainable community.

The Second Internal Departmental Briefing was held on May 22, 2018. The presentation involved an introduction to the SAP Capital Project Recommendation Memo and the SAP Goals and Recommendations. Sunrise staff was provided the opportunity to review and comment on the SAP Goals and Recommendations. The meeting was well attended, and the feedback contributed to the overall content of the SAP Goals and Recommendations. The Team also collaborated with the Department of Leisure Services and the Community Development Department in creating the final version of the SAP Goals and Recommendations.

Staff will continue to be an integral part of the SAP implementation. A cross-disciplinary approach will be necessary, departments will need a collaborate and additional staff resources or expertise may need to be developed in conjunction with certain recommendations.

iii. Conclusions

The SAP provided an extensive outreach component for the general public, the business community, and Sunrise staff. The SAP outreach efforts provides a foundation to build community support for the implementation of the SAP after its final approval. Many of the SAP Goals and Recommendations suggest an ongoing commitment to maintain and enhance community outreach. To gain additional community buy-in, Sunrise would benefit from promoting the SAP on the City website and continuing outreach during implementation of the Goals and Recommendations.

Endnotes

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Appendices

Appendix A:	Sunrise Existing Conditions Memorandum
Appendix B:	Sunrise Vulnerability Analysis
Appendix C:	SAP Goals and Recommendations
Appendix D:	Sunrise Sustainability Data Request
Appendix E:	Sunrise STAR Crosswalk
Appendix F:	SAP Capital Project Recommendation Memorandum
Appendix G:	SROI Analysis
Appendix H:	Sunrise STAR Points Not Yet Achieved
Appendix I:	Sunrise Sustainability Survey Questions and Results