

2016 CLIMATE ACTION PLAN



Village of Pinecrest

Pinecrest's Climate Action Plan (CAP) provides a framework for the Village, its residents and commercial sector to curb climate emissions, prepare for climate impacts and become a more resilient community. The CAP is an evolving document. Action items and targets will become more quantitative and specific as we further address baseline data analysis, vulnerability assessments, budget planning and community input.

CLIMATE CHANGE OVERVIEW

The Greater Miami/Ft. Lauderdale area is one of the most populous metropolitan areas in the Southeastern region of the United States and its climate is influenced by many factors, including latitude, topography, and proximity to the Atlantic Ocean and the Gulf of Mexico. There have been increasing numbers of days above 95°F and nights above 75°F, and decreasing numbers of extremely cold days since 1970. Also, summers have been either increasingly dry or extremely wet. The number of Category 4 and 5 hurricanes in the Atlantic basin have increased substantially since the early 1980s compared to the historical record that dates back to the mid-1880s.

Large numbers of cities, roads, railways, ports, airports, oil and gas facilities, and water supplies are at low elevations and potentially vulnerable to the impacts of sea level rise. Miami, Tampa, Charleston, Virginia Beach and New Orleans (with roughly half of its population living below sea level) are among those most at risk. Sea level rise increases pressure on utilities – such as water and energy – by contaminating potential freshwater supplies with saltwater.

“Taken together, this evidence tells an unambiguous story: the planet is warming, and over the last half century, this warming has been driven primarily by human activity.”

There is an imminent threat of increased inland flooding during heavy rain events in low-lying coastal areas such as southeast Florida, where just inches of sea level rise will impair the capacity of stormwater drainage systems to empty into the ocean. Drainage problems are already being experienced in many locations during seasonal high tides, heavy rains, and storm surge events.

Sea level rise and storm surge can have impacts far beyond the area directly affected. Homes and infrastructure in low areas are increasingly prone to flooding during tropical storms. Sea level rise reduces the efficiency of underground stormwater systems by partially submerging infrastructure and reducing their capacity for water retention during flood events.

Evidence for climate change abounds, from the top of the atmosphere to the depths of the oceans. Scientists and engineers from around the world have meticulously collected this evidence, using satellites and networks of weather balloons, thermometers, buoys, and other observation systems. Evidence of climate change is also visible in the observed and measured changes in location and behavior of species and functioning of ecosystems.

INTRODUCTION

Our Goals

● Leadership

- Implement sustainability initiatives
- Prepare for Climate Change
- Educate residents and business owners about climate action initiatives
- Be a model for other municipalities

● Transportation

- Increase transit options
- Create multi-modal transportation plan to encourage and facilitate pedestrian and bicycle travel
- Increase Electric Vehicle use
- Integrate climate goals into transportation policy

● Building

- Encourage sustainable and energy efficient buildings and development
- Improve stormwater design
- Create accessible building energy use information
- Incentivize LEED certified homes and buildings and renewable energy improvements

● Environmental Stewardship

- Preserve and maintain green spaces
- Increase commercial landscaping
- Increase number of trees
- Increase recycling rate
- Energy and water conservation
- Promote Florida friendly landscaping
- Schools actively engaged in stewardship and competitions

● Mitigation

- Lower Carbon Footprint
- Update Emissions Inventory Report and set goals for 2020 and 2030
- Reduce electricity use
- Implement renewable energy plan
- Ongoing monitoring of emissions data
- Create incentives for commercial sector to become more energy efficient

● Adaptation and Resiliency

- FEMA Community Rating System to decrease cost of flood insurance
- Adaptation, mitigation and resiliency strategies

LEADERSHIP

Innovation + Education

Pinecrest is a leader in sustainable living practices and is a model for other municipalities that would like to implement climate action initiatives. It has laid the groundwork for any municipality to piggyback off sustainable practices, ordinances and resolutions that include green regulations, green procurement and a sustainable building program. Pinecrest officials also work diligently to disseminate sustainable living information through local, state and national forums. Pinecrest's innovation and leadership will impact future generations through the self-initiated sustainable practices it has put in place.

Innovation + Education to date

- 2009 Green Action Plan
- 2010 Strategic Action Plan Sustainability Element
- 2010 Going Green Conference
- Bike Ride Day
- First free municipal electric vehicle fast charging station
- Green procurement
- Greenhouse gas emission and forecast report
- Green regulations and sustainable building ordinances
- Earth Day Festival
- Collaborative relationship with CLEO Institute
- Climate Action Rally
- Climate Action Compact with Miami-Dade County Public Schools
- Establishment of the Sustainability Fund
- PACE District (Also in Building and Land use)

2030 Vision

- Achieve the seven pillars of a "livable city" to include frequent transit service and neighborhood-serving businesses in a compact area, mixed-usability buildings, diversity in business and living, conserving usable greenspace, promoting resident health, implementing accessible multi-modal transportation points and promoting sustainable living

Actions to implement by 2020

- Develop volunteer program with emphasis on debris removal in environmentally sensitive areas such as, mangroves (Pinecrest by the Bay) and canal waterways that feed into Biscayne Bay
- Establish Comprehensive Environmental Education Program

Actions to implement by 2030

- Foster a livable neighborhood that conserves land, and is sufficiently dense to support frequent transit service and neighborhood-serving businesses
- Provide a mix of housing, workplaces, and neighborhood-serving shops and services
- Offer housing choices suited to all types of households and household incomes, provide a range of jobs, shops, and services, support diverse local businesses
- Support the physical and mental health of residents by having a clean and safe neighborhood that promotes social inclusion and sociability
- Create a livable neighborhood that is well served by parks, playgrounds, plazas, and greenways. Trees and plantings are integrated into street designs. Buildings are designed to provide compact gardens, courtyards, terraces, and green roofs
- Support car-free living by being well-connected to citywide and regional destinations by sustainable transportation modes (walking, cycling, public transit, paratransit and taxi). Streets and public transit are designed for universal accessibility
- Use natural resources and energy sparingly and efficiently, and generate little waste

Background

In just six years, Pinecrest has implemented various initiatives to reduce its carbon footprint that include, to name a few, the first free municipal electric vehicle fast charging station in Florida, green procurement, greenhouse emission gas and forecast report for municipal buildings, and residential and commercial areas in the Village, and adopting green regulations and sustainable building ordinances. Pinecrest is committed to minimize the community's impact on the environment through education and implementing green initiatives in all facets of business, resident and government processes.

Pinecrest has a comprehensive history of environmental sensitivity and activism, as a community and as a municipal government. In 2009, the Going Green Advisory Group was established as a forum to begin the process of information gathering and dissemination with regards to sustainability. As a result of the collective research efforts and numerous meetings, the group recommended the consideration of a Green Building Ordinance, Green Landscaping Regulations, Green Fleet Program, Green Purchasing and Recycling initiatives at all Pinecrest parks and the Municipal Center. All of the initial recommendations have been implemented with many more that followed. The most noted accomplishments of the Pinecrest Going Green Campaign during its first year include the Going Green Conference hosted in Pinecrest in January 2010, the Earth Day Festival held in April 2010 and the implementation of recycling initiatives at all parks and the Municipal Center.

The annual Pinecrest Earth Day Festival started in 2010. The ongoing event educates the community about how to be environmentally responsible and showcases numerous workshops on topics such as energy efficiency ideas for your home, water conservation, the Everglades, and more. The event hosted over 60 green vendors, including a farmers market. Since its inception some 15,250 visitors have attended the Earth Day Festival.

A cooperative relationship with the CLEO Institute creates Climate Leadership Educational Opportunities for residents and visitors. Pinecrest in coordination with the CLEO Institute hosted a 2013 South Florida Climate Action Rally and climate science briefing and panel discussion with guest of honor US Senator Sheldon Whitehouse of Rhode Island in April 2013. The rally featured elected officials, local business owners, cultural and community institutions, schools and other groups taking the stage to showcase the support for climate action in South Florida. Pinecrest houses a CLEO Institute satellite office in Pinecrest Gardens and collaborates to host climate trainings, forums, film screenings and panel discussions.

By educating employees, residents and visitors, Pinecrest is spreading the message that action is needed to prevent climate change that can negatively affect generations to come. The Pinecrest Gardens Environmental Coordinator is dedicated to fostering a bond between students and nature by enhancing students' understanding of the environment. Our goal is to inspire community members to take action preserving biodiversity and ecosystems. Programming for the 2014-2015 year includes the first ever Nature Film Night Series at Pinecrest Gardens. Each nature film night features fun and interactive educational displays inspired by that night's film. After the exhibition, movie-goers will make their way over to the Banyan Bowl's outdoor

amphitheater for a live action documentary that features adventurous animals and breathtaking nature scenes. The goal of the Nature Film Series is to facilitate kids' interest in protecting and conserving nature.

Additional programs that support conservation, preservation and sustainability include a video contest where students will create a short video that identifies one of the seven types of environmental pollution. In their videos, students must demonstrate a proposed solution for the pollution issue of their choice. The Gardens will also host a Spring Break Workshop Series for students where kids will create nature-based projects to take home with them; topics will incorporate sustainability and science.

The 2010 Strategic Plan established sustainability as one of six core values of the government and places municipal focus on increased energy efficiency and sustainable growth management policies. It is Pinecrest's goal to reduce overall greenhouse emissions by 7% below December 2012 levels by 2030. The Village conducted a Local Government Operations (LGOP) and a community-wide Greenhouse Gas emissions inventory for the years 2010, 2012 and 2014, and provides an emission baseline to evaluate the Village's progress towards its GHG emissions reduction goals.

Pinecrest's 2010 baseline LGOP Inventory found that local government operations (i.e. operations related to facilities, vehicles, and infrastructure directly owned and/or controlled by the Village) were responsible for emitting 2,351 metric tons of CO₂e in the 2010 base year, with emissions from purchased electricity and fuel for the Village's buildings and facilities contributing the most to this total (50.2%). Pinecrest's vehicle fleet and employee commuting also contributed significantly to the total LGOP emissions, at 21.7% and 18.6% of the total, respectively.

The 2012 emission inventory found that Pinecrest's local government operations were responsible for emitting 2,320 metric tons of CO₂e, a 1.3% decrease from 2010. In 2012, emissions from purchased electricity and fuel for the Village's buildings and facilities contributed 50.2% to the emissions total, while Pinecrest's vehicle fleet and employee commuting contributed 20.5% and 19.7%, respectively.

The 2014 emission inventory found that Pinecrest's local government operations were responsible for emitting 2,061 metric tons of CO₂e, a 12.3% decrease from 2010. In 2014, emissions from purchased electricity and fuel for the Village's buildings and facilities contributed 56.3% to the emissions total, while Pinecrest's vehicle fleet and employee commuting contributed 18.7% and 14.8%, respectively.

In 2010, the base year, the Pinecrest community as a whole emitted 232,616 metric tons of CO₂e¹, with the Transportation Sector contributing the largest single source at 55% of the total emissions. In 2014, the most recent emissions year, the Pinecrest community emitted 220,309 metric tons of CO₂e. The Transportation Sector was again the largest single source of emissions at 52% of the total. These results indicate that fuel conservation in the Transportation Sector represents the greatest opportunity for Pinecrest to reduce emissions community-wide.

TRANSPORTATION

Infrastructure + Service

Pinecrest is enhancing mobility, access and safety through a range of transportation choices that are key to reducing auto dependence. The Village is currently looking at opportunities for transit and transportation improvements that guide planning and investment to expand transit, pedestrian and bicycle infrastructure and service.

Infrastructure + Service to date

- Three Electric Vehicle fast-charging station
- Bike Lane and Route Plan
- US 1 Corridor Bicycle and Pedestrian Mobility Study
- Green fleet and practices and procedures
- Solar-powered pedestrian crossing flashers
- Village actively advocates for Light Rail infrastructure along South Miami-Dade Busway to further reduce emissions generated by traditional bus transportation.
- Traffic Circles with solar-powered lighting
- Pinecrest People Mover to reduce car trips within Village

Vision 2030

- Decrease vehicle miles travelled by 15 percent
- Create and implement a Trip Reduction Program
- 15% of cars are electric vehicles, and significant progress has been made in transitioning diesel vehicles to next generation alternative fuels
- Complete alternative transit modalities in place
- Build more traffic circles to further decrease emission on residential streets

Actions to Implement by 2020

- Improve sidewalks and crossings on arterial streets that to connect urban centers
- Decrease vehicle emissions by 6.5 percent from 2013 baseline
- Expand Village's municipal electric vehicle fleet
- Implement US 1 Safe Routes to School
- Implement Bicycle and Mobility Pedestrian Plan
- Develop Village-wide transit communities strategy that integrates neighborhoods with high capacity transit along South Miami-Dade Busway corridor
- Expand Pinecrest People Mover service
- Implement educational programs throughout the community to encourage the reduction of vehicle miles travelled through transit bicycle and pedestrian means

Actions to Implement by 2030

- Develop a Village-wide network of neighboring greenways that prioritize walking and bicycling on residential streets
- Add alternative fuel transit service to high demand routes within Village to complete Pinecrest People Mover route
- Collaborate with Miami-Dade County transit to expand transit system to include more routes and more frequent service in areas identified in the Master Plan by funding service, building infrastructure, and coordinating planning.
- Pursue grant funding and partners to develop a network of fast-charging stations that will allow vehicles to charge in under 30 minutes increasing vehicle range, expanding opportunities for charging, and providing commercial opportunities to business owners
- Expand Bike Lane and Route Plan
- Diversify fuel options

Background

To reduce the Village's carbon footprint and reduce emissions the Village is increasing the use of electric vehicles and has integrated climate goals into its transportation policy.

The first free and publicly accessible electric car fast-charging station in Florida has been installed in the Pinecrest Gardens' parking area at 11000 Red Road. The station can charge an electric car in a fraction of the time it takes to charge with a regular charging station. For example, a Nissan LEAF can be charged from zero to 80 percent in less than 30 minutes. Other vehicles may take more or less time to achieve a similar charge. Two additional electric vehicle fast-charging stations are slated to be installed in 2014.

To improve connectivity with neighboring areas the Village is implementing a comprehensive Bike Lane and Route Plan. The Village Council approved the installation of bike lanes on SW 96 Street, SW 112 Street, SW 60 Avenue, SW 62 Avenue, SW 72 Avenue, SW 74 Avenue and SW 82 Avenue. A survey of these roadways is currently underway to determine the infrastructure needs for installing the lanes. It is expected to be funded by the \$1 million FDOT Transportation Enhancement Cycle Grant scheduled to be funded in 2017-2018, if not sooner.

To improve walkability initiatives, the Village is in the process of developing the US 1 Corridor Bicycle and Pedestrian Mobility Study and has entered into an agreement with a consultant who specializes in pedestrian mobility and alternative mode of transportation. The study will identify walkability initiatives along the US 1 Commercial Corridor, and improve connectivity to residential areas.

Pinecrest has a green fleet and practices green fleet procedures. Fuel consumption and mileage has been tracked for the past 15 years. Recycling used vehicle oil, air condition refrigerant, and radiator fluid are standard practices. To improve fuel efficiency, regular maintenance is provided for all vehicles. Recycling of lead wheel balancing weights and metal parts is also in place to reduce harmful waste. The Village receives a recycling payment from the local metal recycler and those funds are returned to the Village's General Fund. A parts washing machine that filters and recycles parts washing fluid reduces the amount of toxic fluid and saves money for Pinecrest. Pinecrest also purchases long wearing tires and recycles all tires and vehicle batteries. All fleet vehicle users are educated to know the importance of reporting all leaks or malfunctions, as well as fuel conservation techniques.

Pinecrest continues to expand the fleet with energy efficient vehicles and is currently studying the viability of larger hybrid buses for the People Mover Program.

The implementation of traffic calming circles reduces the Village's carbon footprint by allowing vehicles to cruise through intersections, instead of stopping and going which increases car emissions.

BUILDING

Development + Land Use

Pinecrest strives to maintain the appearance of the Village and the quality of life for residential living by preserving the streetscape, minimizing impacts from commercial development, protecting the caliber of our educational institutions, and planning for the future needs of our community, while taking sustainability goals into account. It is the goal of the Village Council to minimize our community's impact on the environment with increased energy efficiency and growth management policies.

Development + Land Use to date

- 2010 Strategic Plan Climate Element
- Sustainable Building Program
- Green Land Development Regulations
- Green Building Ordinances
- Property Assessment Clean Energy (PACE) Program
- Master Plan Climate element
- US 1 Vision Plan Cross Access Easements
- Expedited Permit Program funds Village Sustainability Fund
- LEED Certified building is incentivized through permit fees discounted by as much as 50 percent and acknowledgement through proclamations to raise climate action awareness
- Amendments to Land Development Code to regulate building mass and introduce energy efficient design
- US 1 Vision Plan promotes mixed-use building along commercial corridor to shorten worker commute
- Improvement to the landscape ordinance provides protection for large trees

2030 Vision

- Building "energy use" information is just as available and understandable as a "miles per gallon" rating on a vehicle is today, and energy efficiency has a clear market value
- Building owners, operators, occupants have access to real-time feedback about the energy use in their building and options to improve energy performance
- Make the energy benchmarking scores of the Village's municipal buildings publicly available
- Require building energy audits for the largest and least efficient commercial and multifamily buildings to help identify cost effective improvements
- All buildings in the Village, regardless of age, have achieved a basic level of energy performance
- Energy efficiency improvements are integrated into all significant building renovations
- Adopt a Green Stormwater Infrastructure (GSI) policy and implementation strategy affirming GSI as the preferred stormwater management approach

Actions to implement by 2020

- Implement Master Plan Climate Element
- Pilot a retro-commissioning incentive program to provide financial and technical assistance to tune up energy systems in existing commercial buildings
- Require the energy performance of buildings undergoing major renovation to come close to the energy performance requirements for new buildings
- Implement an educational campaign to increase community awareness regarding the Property Assessed Clean Energy (PACE) program.
- Continue to evaluate the impacts of climate change on the drainage system and identify strategies for enhancing resilience.
- Expand precipitation monitoring and evaluation capabilities to mitigate future urban flooding risk and enhance understanding of neighborhood-scale climate impacts
- Evaluate the impacts of sea level rise on flood prone areas, and consider implications for land use management strategies with the completion of the comprehensive Stormwater Basin Master Plan
- Collaborate with neighboring municipalities and impacted residents and businesses to create a coordinated approach to land use management that enhances preparedness and increases the cost effectiveness of preparing for sea level rise. Prepare a worst case scenario response strategy
- Evaluate climate impacts to transportation infrastructure and operations, including critical needs for emergency response, goods and services movement, and community access. Identify and prioritize strategies for enhancing resilience
- Consider future climate conditions when designing buildings and identify current or future opportunities to include elements such as on-site stormwater management, distributed power generation, and passive solar
- Pilot an advanced green building standard on a Village facility to assess its appropriateness for resilient design and to promote similar levels of green building in the private market
- Review development codes and incentives, and identify barriers and potential opportunities, to encourage private development to become more resilient (e.g. increasing on-site stormwater retention)
- Retro-fit Municipal Center with solar panels

Actions to implement by 2030

- All buildings in the Village, regardless of age, have achieved a targeted basic level of energy performance
- Energy efficiency improvements are integrated into all significant building renovations
- Energy codes have successfully transitioned to an outcome-based approach
- Create a minimum energy performance standard to ensure widespread improvement of the Village's entire building stock. A standard should focus on the most cost effective energy improvements, and can ramp up over time after tools and incentives are available to assist building owners.
- Require periodic retro-commissioning (building tune-ups) for the largest and least efficient commercial and multi-family buildings.

Background

In 2011, the Village Council voted to join forces with neighboring municipalities to create the first district in Florida known as the Clean Energy Green Corridor Property Assessed Clean Energy (PACE) District for the purpose of making PACE financing available to local property owners. PACE is a local governmental program that allows municipalities to provide financing to private property owners for energy efficiency, renewable energy, and hurricane protection improvements to their properties. The property owner then pays it back over up to twenty years through a special assessment on their property tax bill. It is 100% non-credit based financing which allows property owners easy access to capital.

The Village has implemented an educational campaign to increase community awareness via the Property Assessed Clean Energy (PACE) Program. To date 26 properties in Pinecrest have been financed totaling \$1,320,000 in property upgrades. There are another 39 projects approved in the Village. These are in various stages of the construction process and total another \$1,250,000 in financing. The largest residential project in the district was in Pinecrest and was completed for \$160,000. In addition over 600 industry professionals, which include contractors, architects and energy auditors, have been trained in the PACE certification program.

The Village Council recently adopted amendments to the Village's Comprehensive Development Master Plan to include a new climate change element to address the impacts of rising sea levels.

The Village retrofitted existing light switches in Village Hall and Police Department high-use areas including bathrooms and locker rooms to automatic on off occupant sensors. Staff will continue to identify sustainable building solutions at all Village facilities.

The Village Council has approved a Comprehensive Stormwater Basin Master Plan that includes review of the effects of sea level rise on the existing system and develops a long-term capital project plan to address future infrastructure needs identified in the plan.

The Village Council has approved the expansion of the community Center to include LEED certified design and construction.

The US 1 Vision Plan requires cross access easements between commercial properties to reduce vehicle miles travelled. Bicycle / pedestrian Mobility Plan completed in 2015 will increase pedestrian traffic to the US 1 (Pinecrest Parkway) Commercial Corridor.

The Expedited Permit Program charges a higher fee to review building permits. Revenues from this program are earmarked for the Village's Sustainability Fund. An example of a program that was funded by the Sustainability Fund is the Human Resources Department's paperless job application system.

Amendments to the land development code include sustainable building program incentives, partial rebate of permit fees, and recognition for construction of LEED or equivalent certified homes. Green land development regulations provide standards for construction of solar electric system, partial green space credit for permeable

driveways, and require all homes to be prepped for solar electricity or water at the time of construction. Additional land development regulations require energy efficient design and construction for new homes that exceed 6,000 square feet in area. Required improvements include a solar water heater, tankless water heater, a hybrid electric water heater or a photovoltaic solar electric system; an air conditioning system that has a minimum Seasonal Energy Efficiency Rating (SEER) of 15 and utilizes natural refrigerants or other refrigerants that contain no hydrochlorofluorocarbons (HCFC); interior finishes that emit low/no levels of volatile organic compounds (VOC); and permeable driveways consisting of porous concrete, open cell unit pavers (turf block), flagstone, or brick pavers allowing the infiltration of water into the underlying soil. A Climate Change Element in the Comprehensive Development Master Plan identifies and addresses impacts of changing climate and rising sea levels.

Environment

Stewardship + Conservation+ Water + Recycling

The Village's Strategic Plan established environmental sustainability as one of six core goals to minimize the community's impact on the environment with increased energy efficiency and growth management policies. Pinecrest is dedicated to the conservation and hands-on management of all public green spaces. It also works to educate the public about the importance of trees through established programs, and is working on implementing incentive based programs that will encourage homeowners and business owners to plant more trees and preserve private green spaces.

Stewardship + Conservation to date

- Green Landscape Code
- Green Commercial Landscaping Regulations
- Adopt-a-Tree Program
- Street Tree Planting Program
- Tree City USA
- Pineland Rock Preserve and Crenulated Lead Plant
- US 1 Vision Plan – Xeriscape and Florida Pines along commercial property and medians
- Bringing Pines Back to Pinecrest Program
- Florida Green Building Coalition – Florida Green City Silver Certification
- 2014 17th Annual Sustainable Florida Best Practices Sustainable Government Award
- Active member of International Council for Local Environmental Initiatives (ICLEI), the Florida Gold Coast Clean Cities Coalition, the U.S. Green Building Council and the Florida Green Building Coalition
- Natural Resource Protection at Pinecrest Gardens, including to two endangered plant species
- Tracking water use
- Tracking Recycling

2030 Vision

- Install solar panels on all municipal buildings
- Implement Water Reclaiming Program
- Increase recycling tonnage by 10 percent
- Implement Water Reclaiming Program

Actions to implement by 2020

- Maintain Tree City USA status
- Have an accurate inventory of all trees in the Village
- Improve stewardship of the Coral Pine Park by working with conversation experts to ensure protection of endangered plant species found on site and preserve the pineland rock preserve
- Amend Land Development Regulations to include water reclaiming element
- Identify areas where water can be reclaimed for use at municipal facilities
- Develop strategy in coordination with Miami-Dade County Solid Waste to obtain baseline recycling data

Actions to implement by 2030

- Encourage or require more landscaping in commercial corridor
- Increase the number of trees in the Village by 20 percent
- Incentivize water reclaiming for grandfathered properties

Background

The Village Council adopted a green landscape code requiring the inclusion of Dade County Slash Pine trees in required landscaping plans and the provision of wider landscape buffers adjacent to Pinecrest Parkway. The Village continues to enforce and maintain the landscape ordinance to maintain a lush, consistent, full coverage, street tree system and tree canopy. Pine trees have been planted within the median of Pinecrest Parkway consistent with the Village's "Bringing Pines Back to Pinecrest" initiative. Additionally, fines for the hat racking of trees have been increased and enforcement provisions have been reviewed and enhanced as recommended by the Village Attorney through recent amendments to the Village's Land Development Regulations.

The Adopt-A-Tree program and Street Tree Planting Program are promoted via the Public Works website and residential newsletter where residents can apply for trees to be planted on their property. There is also a Street Tree Planting Program where residents can get free trees planted with the right-of-way in their property. The Adopt-a-Tree program will also be promoted via press releases and an educational video.

Tree City USA has recognized the Pinecrest for six consecutive years in recognition of the Village's commitment to community forestry. The Village has met the foundation's standards for receiving this national recognition in part by planting over 10,000 street trees since 1997. Pinecrest achieved Tree City USA recognition by meeting the program's four requirements: a tree board or department, a tree-care ordinance, an annual community forestry budget of at least \$2 per capita and an Arbor Day observance or proclamation.

Pinecrest has encouraged or required more landscape of commercial corridor. Building and Planning Department staff have contacted property owners within the Pinecrest Parkway corridor and asked that any deficient landscaping be restored. This effort has led to the planting of additional landscaping within the corridor. Additionally, the Village Council has adopted amendments to the Village's Land Development Regulations that provide incentives for the redevelopment of properties adjacent to the corridor to include additional landscaping and Pine Trees within a wider 8-foot landscape buffer. The Village conducts a periodic review of approved landscape plans for the commercial corridor to ensure plants and landscaping are maintained as required.

Pinecrest has worked diligently to preserve the rare Crenulated Lead Plant which grows in a Pineland Rock preserve in Coral Pine Park, since its incorporation in 1996. The critically endangered species in the Pineland Preserve at Coral Pine Park is the Lead Plant, *Amorpha crenulata*. This plant has been catalogued by Fairchild Gardens biology staff and only a few individuals remain. Parks and Recreation has also reached out to the staff specialists at the Institute for Regional Conservation (IRC) for their assistance with the Pine Rockland Initiative (PRI). The IRC is a local organization which specializes in Florida ecology, and the PRI in particular specializes in restoring such Pineland areas. Parks and Recreation is also working with Tremendous Miami in assisting with supplying the planting material, clearing of evasive plants and near-term and long-term costs.

Pinecrest Gardens attracts over 150,000 visitors each year and was placed on the National Register of Historic Places in October 2011, making it historically significant on a local, state and national platform. It is a premier venue for the arts, education and environmental conservation and preservation. On any given day one can catch an arts performance, tour the 14 acres of native forested wetland, tropical hardwood hammock and native cypress slough hammock or take a class in horticulture, archeology and botany. The site contains a vaibale population of two listed plant species, Cardical airplant (*Tillandsia fasciculate* var. *densispica*) and abrupt-tipped maiden fern (*Thelypteris augescens*). Cardinal airplant is listed by the State of Florida as Endangered. The rockland hammock in the site is recognized by the Florida Natural Areas Inventory as Critically Imperiled. The site also includes solution holes which are listed as imperiled by the same agency. A detailed inventory of all site plants and their status can be found in the Appendix of this plan.

The rockland hammock in Pinecrest Gardens contains potential habitat for state listed and migratory birds, including red whiskered vireo, work eating warbler, little blue heron, snowy egret, tricolor heron, white ibis, peregrine falcon, Southeastern American kestrel, bald eagle, wood stork, osprey, least tern, Bachman's warbler, and Cooper's hawk. The site also contains habitat for the Miami-Black headed snake.

Surveys of the solution holes in Pinecrest Gardens may detect the presence of rare invertebrates found in solution holes, wells, or subterranean caves in Miami-Dade County. These include the Florida cave amphipod, Hobbs' cave crayfish, and the Miami-cave crayfish.

The solution holes in Pinecrest Gardens contain habitat for several rare fish species, including bigmouth sleeper (*Gobiomorus dormitory*), mountain mullet (*Agonostomus monticola*) and mangrove gambusia (*Gambusia rhizophorae*). Pinecrest Gardens is one of the few locations in southern Florida for all three of these species, and the only known freshwater location for the mangrove gambusia.

Mitigation

Energy

Pinecrest has a long history of environmental sensitivity and activism, as a community and as a municipal government. This is why the Village is committed to reducing its carbon footprint by implementing programs that capture baseline numbers for recycling, and water and electricity usage. The Village also completed its first Community Greenhouse Gas Emission Report in December 2013 which established the baseline information in order to monitor effects of the Village's effects of sustainable efforts on future emissions. By establishing a baseline, the Village can move forward toward decreasing waste and the use of water and electricity.

Energy + Water + Recycling to date

- Tracking electricity use
- Community Greenhouse Gas Emissions Report
- Carbon Credit offset Program

2030 Vision

- Implement electricity usage monitoring devices in 50 percent of households
- Reduce greenhouse gases by 15 percent from December 2012 levels
- 100 percent of Pinecrest households are connected to potable waterline
- Increase energy efficiency for business/commercial sector by providing information about retrofit programs through the PACE program and ESCO options

Actions to implement by 2020

- Incorporate mitigation measures that will provide verifiable greenhouse gas savings
- Develop fuel efficiency target goals for Village fleet
- Retrofit all municipal buildings with sustainable energy solutions
- Continue educational campaign to increase awareness about Property Assessed Clean Energy (PACE) program and focus on commercial sector
- Complete waterline extension
- Community Center to be renovated with LEED standards
- Create community outreach material that shows breakdown of cost and return of installation of solar panels on roof of median-sized homes
- Reduce GHG emissions for business/commercial sector 7 percent from 2013 levels

Actions to implement by 2030

- Encourage or require all Village Households to recycle
- Reduce greenhouse gases by 15 percent from December 2012 levels
- Implement water reclaiming program
- Implement credit system for shopping center owners who install electric vehicle chargers in parking areas
- Solar panel installations for business and residential buildings to expand by 100 percent
- Reduce GHG emissions for business/commercial sector 50 percent from 2015 levels

Background

The Building and Planning Department is currently looking at viable solutions and opportunities for water re-use. All new expansions and renovations will provide opportunities for sustainable efforts for water use opportunity as well as energy efficiency opportunities.

Pinecrest has been tracking the use of water and electricity in all of its buildings since October 2009 with the goal of reducing water and electricity use.

Small commercial buildings in the business/commercial sector are an untapped source for energy savings since most of the buildings were built in the early 1980s. There is a tremendous to educate and provide the tools necessary that will help owners reduce their carbon footprint by providing energy performance analysis and technology.

Better collection and dissemination of energy consumption and benchmarking data will support the design of more meaningful energy models and help owners evaluate the performance of specific buildings. A local example of what a business can do to reduce its carbon footprint is, electronics retailer BrandsMart USA in Palmetto Bay. It recently completed a facility-wide energy conservation project, which is expected to save BrandsMart's South Dade location 34 percent on its annual utility costs. The project is funded through the Ygrene Energy Fund's PACE financing. The retrofit includes major enhancements to the facility's heating and cooling equipment, replacing lighting fixtures with LEDs, and modifying the existing energy control system. The BrandsMart USA location is projected to save \$135,000 in annual costs and more than \$1.6 million over the life of the contract.

The Village completed its first Community Greenhouse Gas Emission Report in December 2013 for the years 2010 and 2012 which established the baseline information needed in order to monitor the Village's effects on future emissions. To achieve this ambitious goal, Pinecrest must strive to consistently find ways to conserve water and energy, facilitate the transition to renewable power sources, and improve the way staff, residents, and visitors travel within our community.

The Village conducted a Local Government Operations (LGOP) and a community-wide Greenhouse Gas emissions inventory for the years 2010, 2012 and 2014, and provides an emission baseline to evaluate the Village's progress towards its GHG emissions reduction goals.

Pinecrest's 2010 baseline LGOP Inventory found that local government operations (i.e. operations related to facilities, vehicles, and infrastructure directly owned and/or controlled by the Village) were responsible for emitting 2,351 metric tons of CO₂e in the 2010 base year, with emissions from purchased electricity and fuel for the Village's buildings and facilities contributing the most to this total (50.2%). Pinecrest's vehicle fleet and employee commuting also contributed significantly to the total LGOP emissions, at 21.7% and 18.6% of the total, respectively.

The 2012 emission inventory found that Pinecrest's local government operations were responsible for emitting 2,320 metric tons of CO₂e, a 1.3% decrease from 2010. In 2012, emissions from purchased electricity and fuel for the Village's buildings and facilities contributed 50.2% to the emissions total, while Pinecrest's vehicle fleet and employee commuting contributed 20.5% and 19.7%, respectively.

The 2014 emission inventory found that Pinecrest's local government operations were responsible for emitting 2,061 metric tons of CO₂e, a 12.3% decrease from 2010. In 2014, emissions from purchased electricity and fuel for the Village's buildings and facilities contributed 56.3% to the emissions total, while Pinecrest's vehicle fleet and employee commuting contributed 18.7% and 14.8%, respectively.

In 2010, the base year, the Pinecrest community as a whole emitted 232,616 metric tons of CO₂e¹, with the Transportation Sector contributing the largest single source at 55% of the total emissions. In 2014, the most recent emissions year, the Pinecrest community emitted 220,309 metric tons of CO₂e. The Transportation Sector was again the largest single source of emissions at 52% of the total. These results indicate that fuel conservation in the Transportation Sector represents the greatest opportunity for Pinecrest to reduce emissions community-wide.

Adaptation and Resiliency

Stormwater + Flood Plain Management

In preparation of the proposed climate change element including review of the supporting data and analysis, it is apparent that climate change and sea level rise are occurring. A recent report entitled, *A Region Responds to Changing Climate*, prepared by the Southeast Florida Regional Climate Change Compact Counties in October 2012, indicates that sea levels are projected to rise in South Florida within a range that extends from 9 to 24 inches by the year 2060. Proposed amendments to the Comprehensive Plan include supporting maps and data, analysis, and incorporation of new goals, objectives, and policies within a new climate change element. Proposed amendments have been prepared for the identification and resolution of issues and impacts related to existing and projected changes in global climate. Proposed amendments also include identification of adaptation action areas and specific strategies for the protection, accommodation, and avoidance of the impacts of global climate change within the most vulnerable and low lying areas of Pinecrest.

Stormwater and Flood Plain Management to date

- Stormwater Master Plan completed using sea-level rise projections

2030 Vision

- Have infrastructure in place for future stormwater needs
- Reduce resident insurance rates by improving the Village's FEMA Community Rating Score
- Secure grants for flood protection needs
- Implement adaptive management plan for climate change and projected sea-level and groundwater rise
- Provide residents with a vulnerability assessment tool
- Implement emergency preparedness plan for most vulnerable residents

Actions to implement by 2020

- Identify and address flooding in top-ranked areas
- Prioritize stormwater projects for a 5-year capital improvement
- Provide residents with vulnerability Assessment tool
- Identify vulnerable residents
- Implement Emergency Buddy System program for most vulnerable residents

Actions to implement by 2030

- Reduce resident insurance rates by improving the Village's FEMA Community Rating Score
- Have infrastructure in place to fulfill future stormwater needs
- Implement Adaptive Management Plan for Climate Change and projected sea-level and groundwater rise

Background

This year, the Village engaged the services of ADA Engineering, Inc. to develop a Village wide stormwater master plan that analyzes the current and future stormwater needs of the Village. The master plan will provide the Village with a roadmap to implement high priority projects in a systematic and objective manner, help improve the Village FEMA Community Rating Score that will help reduce resident flood insurance rates, help the Village secure grants for flood protection projects, and assist the Village in developing an Adaptive Management Plan for Climate Change and projected sea-level and groundwater rise. Once completed, the stormwater master plan will include planning-level conceptual stormwater improvement projects and cost estimates to address flooding in the top ranked areas and prioritize stormwater projects for a 5-year capital improvement plan.

Appendix

- 2010 Strategic Action Plan
- Green Action Plan
- Greenhouse emission gas and forecast report
- Green regulations and sustainable building ordinances
- Bike Lane and Route Plan
- US 1 Corridor Bicycle and Pedestrian Mobility Study
- Green fleet and practices green fleet procedures
- Sustainable Building Program
- Green Land Development Regulations
- Green Building Ordinances
- Green Landscape Code
- Green Commercial Landscaping Regulations
- Community Greenhouse Gas Emissions Report
- Pinecrest Gardens Management of Natural Resource and Endangered/Imperiled Species Protection Plan