






# MIAMI-DADE CLIMATE ACTION STRATEGY

## 2023 PROGRESS

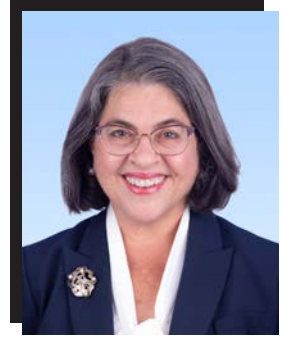


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## LETTER FROM MAYOR DANIELLA LEVINE CAVA

It's often said that Miami-Dade County is at the forefront of the climate crisis – a profound challenge that affects our infrastructure, jobs, security and the health of our families. But it's also true that Miami-Dade is at the forefront of climate solutions. Through the transition to a net-zero carbon community, the development of a cleaner, greener transportation system, the elimination of our dependence on fossil fuels, and the creation of good-paying green jobs, we are addressing the growing threat of climate change and working to protect our most vulnerable residents.



This Climate Action Strategy 2023 Progress Report spotlights the progress we have made so far to reduce carbon pollution, promote equity, encourage growth in clean technology jobs, and lead by example for the world. Because of lags in data reports from outside sources, a more comprehensive report will be available in the County's 2023 Community Greenhouse Gas Inventory in 2024. It is my sincere hope that the actions highlighted in this report continue a downward trend in our emissions.

It's time to re-envision the County's buildings and transportation around our SMART Program, modernizing operations and reducing impacts. This Climate Action Strategy is a community-driven plan that institutes a pathway to net-zero carbon by 2050 and delivers on our goals of the Paris Climate Agreement. *One individual that I would like to personally thank is my Director of Policy Sean McCrackine. As a steadfast, dedicated, and passionate county employee, Sean has been working for decades on climate action.*

While I have mobilized all county departments to work towards these goals, we cannot achieve them without the full support and engagement of our incredible residents. We are building partnerships, integrating equitable solutions in Countywide policies, and supporting an increase in jobs that support climate action. I'm proud to share that I've recently appointed a *Director of Energy, Dr. Patricia Gomez*, who will further steward us toward these goals.

We must take bold climate action. We must deliver on cleaner air, more livable neighborhoods, quality green jobs, and improved public health. Climate equity will be at the center of our work by strengthening our partnerships with community-based organizations and prioritizing investments in the most vulnerable neighborhoods. As you read this plan, I invite you to be a part of our work as we build a resilient future together.

Sincerely,

A handwritten signature in blue ink that reads "Daniella Levine Cava". The signature is fluid and cursive, written in a professional style.

M i a m i - D a d e   C o u n t y

**M a y o r   D A N I E L L A   L E V I N E   C A V A**

*Mayor Cava established four overarching goals, also known as the "four E's" that have been guiding her administration from the outset: Environment, Economy, Engagement, and Equity. Directly below are some highlights focused on Engagement and Equity efforts involving the Climate Action Strategy. The Environment and Economy aspects are covered in other sections of this document.*

## CLIMATE ENGAGEMENT AND EQUITY

In 2021, the County solicited input from community members through a series of virtual discussions in collaboration with the CLEO Institute and the Miami Climate Alliance. This effort informed the development of the Climate Action Strategy, which was released on Earth Day, April 22, 2022. A summary of that engagement can be found in the table below.

COMMUNITY ENGAGEMENT 2021	
# of community public engagement meetings, recorded and shared online.	5
# of community public engagement meetings with Haitian Creole and Spanish Interpretation.	5
# of registered participants for public meetings.	671
# of participants in community survey on climate change opportunities and challenges (survey provided in Spanish, Haitian Creole, English)	493

### 24 Recommendations from the community incorporated into the Climate Action Strategy!

Miami-Dade continues to strive to make our Climate Action Strategy and actions to reduce carbon pollution transparently and equitable. For example, on January 21, 2023, Miami-Dade County and the Miami Climate Alliance partnered to host a Climate Town Hall event at the Main Library in downtown Miami. More than 80 residents attended and asked questions about climate, housing, transportation, social and climate justice, waste, and the environment.



*Miami-Dade residents at the Miami Climate Alliance and Miami-Dade County Climate Town Hall in January 2023.*

Over the course of 18 months, Miami-Dade County staff participated in workshops initiated by Catalyst Miami on behalf of the Miami Climate Alliance for community-based partners to create an open dialogue to identify engagement goals and best practices for public engagement that could be utilized as we implement the projects of the Climate Action Strategy.

The recommendations laid out in the resulting document - *Our County, Our Community, Our Climate Action Strategy* - help remind us that implementing the Climate Action Strategy requires centering people in solutions and sustained and intentional engagement across all corners of Miami-Dade County.

Miami-Dade County invites the public to join us for upcoming Climate Action Strategy Update community meetings. Look for updates on our website at [miamidade.gov/resilience](https://miamidade.gov/resilience).

The Climate Action Strategy builds on greenhouse gas emissions (carbon pollution) reduction goals established by the Board of County Commissioners (BCC) through the County's Comprehensive Development Master Plan (CDMP). The emissions, electricity, and fuel reduction goals include:

- Achieve 80% community-wide emissions reduction by 2050 from baseline year of 2008.
- Reduce the consumption of gasoline in County operations by 30% and the consumption of diesel fuel in County operations by 70% from the baseline year of 2016 by 2028 and further move toward conversion of the County's fleet to electric vehicles.
- Reduce electricity usage for County facilities by 20% from the baseline year of 2009 by 2025.
- Incorporate green building practices into the design of County facilities and infrastructure (Sustainable Buildings Program).
- Have 30% of county-wide energy obtained from solar by 2030 with the ultimate goal of achieving zero emissions for county-wide energy sources.

The Climate Action Strategy directly supports the CDMP goals approved by our Board of County Commission in addition to many other BCC policies.

The Climate Action Strategy also supports and is supported by federal policies and investments. For example, the Inflation Reduction Act and the Bipartisan Infrastructure Law together represent a \$430 billion dollar investment in modernizing the nation's energy system<sup>1</sup>. These federal investments include a new Presidential goal called Justice40 (J40), meaning that 40% of the overall benefits of Federal investments in clean energy and climate solutions are expected to flow to disadvantaged communities that have historically faced disinvestment and under investment.

<sup>1</sup> [www.energy.gov/sites/default/files/2022-08/8.18%20InflationReductionAct\\_Factsheet\\_Final.pdf](https://www.energy.gov/sites/default/files/2022-08/8.18%20InflationReductionAct_Factsheet_Final.pdf)



## ENERGY & BUILDINGS GOALS



### 1. BENCHMARK, RETUNE AND RETROFIT EXISTING BUILDINGS

- BENCHMARK 1.3 BILLION SQUARE FEET COMMUNITYWIDE BY 2026
- RETUNE 1.1 BILLION SQUARE FOOTAGE OF COMMUNITY WIDE BUILDINGS BY 2030
- RETROFIT 167,500 HOMES TO REDUCE ENERGY COSTS 28% PRIORITIZING LOW TO MODERATE INCOME (LMI) HOMES BY 2030



### 2. EXPAND RENEWABLE ENERGY GENERATION

- INSTALL 61,725 KW OF SOLAR ENERGY BY 2030 ON COUNTY BUILDINGS, LAND, AND WATER EQUIVALENT TO 7,498 HOMES' ELECTRICITY USE FOR ONE YEAR
- INSTALL 794,000 KW OF SOLAR ENERGY BY 2030 ON COMMERCIAL AND RESIDENTIAL BUILDINGS EQUIVALENT TO 104,014 HOMES' ELECTRICITY USE FOR ONE YEAR
- MAXIMIZE PARTICIPATION IN UTILITY-SCALE RENEWABLE ENERGY PROGRAMS



### 3. BUILD ULTRA-LOW ENERGY BUILDINGS

- REDUCE THE ENERGY USE INTENSITY OF NEW BUILDINGS 20% BY 2030 BELOW 2020 LEVELS

#### APPROACH 1:



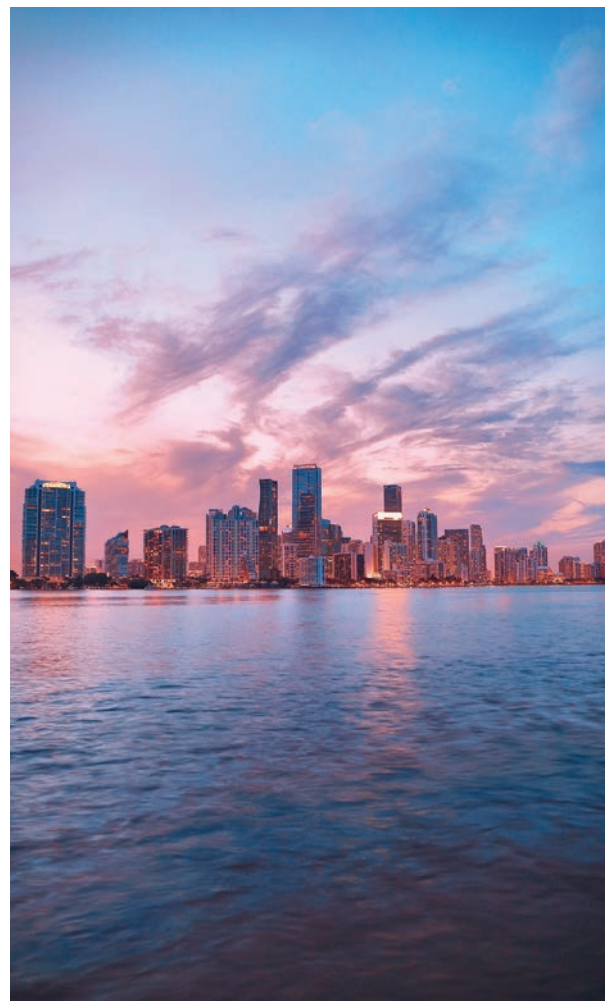
## BENCHMARK, RETUNE AND RETROFIT EXISTING BUILDINGS

**Approach update:** The Building Efficiency 305 and Weatherization Assistance Programs are improving energy and water efficiency in both publicly and privately owned buildings.

### OVERVIEW

Energy from buildings is the second highest source of carbon pollution in Miami-Dade County. Implementation of energy and water conservation measures leads to savings, frees up capital, and lessens energy burdens in vulnerable communities making this an important tool for building equity. Tracking energy and water use data over time, or benchmarking is a low-cost simple, and powerful practice that often serves as a gateway to efficiency upgrades and can be a strong catalyst for participation in rebate and incentive programs. Whether or not a building has been benchmarked, retrofit programs offer many benefits to reduce energy and water use and offer savings and healthier homes to tenants and homeowners.

Action items in this approach are projected to reduce carbon pollution by 37,000 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) if fully implemented.



## WHAT WE HAVE ACCOMPLISHED

Through the **Building Efficiency 305 Challenge**, a free and voluntary program, Miami-Dade County has provided 18 trainings on benchmarking and building efficiency strategies to more than 150 building owners and managers in the community. Trainings included information on how to properly benchmark a property or a portfolio of buildings using Energy Star Portfolio Manager and how to implement no-cost and low-cost conservation measures to improve energy and water efficiency and realize immediate savings. Since the kickoff of the Challenge in 2021, six energy and water audits for participating buildings have been conducted free of charge, and more are planned for 2023. The resulting case studies show that low-cost measures will save these six buildings 3 million kWh of energy and \$351,000 in energy bills. Regardless of building age, size, and type, simple interventions abate the energy bill from 13% to 68%, with an average of 35%.

## WHAT IS NEXT

The County will continue pursuing a Building Performance Ordinance to mandate benchmarking and retro-commissioning for all large existing buildings across the community. This ordinance is projected to cover more than 12,000 properties in Miami-Dade County and provide additional insights into the performance of different building types. When overlaid with demographics and other socio-economic information, the benchmarking data will shed light on underserved market segments that will be key to expanding existing efforts or creating new programs.

As part of this program, in 2023 the two main utilities in the County – Florida Power & Light and the Miami-Dade Water and Sewer Department – will continue the process of facilitating access to benchmarking data for building owners and managers. It is anticipated that the City of Homestead Public Services Department, which is home to both electric and water utility services, will also be involved.

Thanks to the Inflation Reduction Act (IRA) passed in 2022, there will be a fresh influx of federal funding that the County plans to use for enhancing programs around retuning and retrofitting existing buildings. This is a unique opportunity to accelerate the transition to more efficient homes and workplaces that improve everyone's health and quality of life.



### **COUNTY HIGHLIGHT: Five Community Action and Human Services Department Home Assistance Programs expand resilient upgrades to LMI households**

Some types of home retrofits can reduce energy costs for households by increasing energy efficiency while also providing additional health and safety benefits for residents. Miami-Dade County's Community Action and Human Services Department (CAHSD) continues to offer home retrofit services to qualifying residents through multiple Home Assistance programs, most of which contain energy efficiency elements. Currently, five programs are available: the Weatherization Assistance Program (WAP), Energy Expansion Program (EEP), Senior Housing Assistance Repair Program (SHARP), the Home Rehabilitation Program, and the Home Rehabilitation Peace and Prosperity Program.

The focus of these programs varies. For example, the EEP program addresses property improvements such as fixing moisture or standing water, electrical and wiring updates, and structural or roofing issues to make homes "weatherization ready." In comparison, the Weatherization Program focuses on energy-efficient measures such as attic insulation, water heater jackets, energy recovery ventilation (ERV), and weather-stripping, while the Home Rehabilitation program focuses on new roofs and/or storm-resistant windows, both of which can provide energy efficiency improvements. Due to the extreme need in our community, only the Weatherization Assistance Program (WAP) is currently accepting applications as waitlists for the other programs are being addressed.

households in the County through these five CAHSD programs. While state and federal funding varies for each of the programs, approximately \$40,000 to \$50,000 in retrofits are implemented per household. These retrofits bring increased safety, health, comfort, and continual savings to these households. For example, national evaluations demonstrate that households that have undergone weatherization improvements and upgrades save an average of \$372 or more per year on energy bills, year after year. Moreover, energy efficiency measures can support good physical and mental health primarily by creating healthy indoor living environments with healthy air temperatures, humidity levels, noise levels, and improved air quality.



*A Miami-Dade home owner received free weatherization upgrades from Miami-Dade's Department of Community Action and Human Services.*



## ► **COMMUNITY HIGHLIGHT:** The City of Miami passes benchmarking and retuning ordinance

On June 10, 2021, the City of Miami Commission passed its Building Energy and Water Consumption Benchmarking and Retuning Ordinance. The ordinance requires commercial and multifamily buildings 20,000 square feet and above to benchmark (track energy and water consumption) every year, starting in 2023 with those 100,000 and above. The city is also procuring industry-leading software that streamlines the process of communicating with and educating building owners, tracking reporting and compliance data, and distributing custom reports that will help the community understand current energy consumption along with potential reduction and cost-saving opportunities.



### **APPROACH 2:**



## **EXPAND ON-SITE AND OFF-SITE RENEWABLE ENERGY GENERATION**



**Approach update:** Miami-Dade County is advancing solar energy for County-owned buildings and supporting efforts to make solar more affordable and accessible to our community.

### **OVERVIEW**

In South Florida, rooftop solar power is a key tool in the fight against climate change. Installing more rooftop solar on buildings can increase renewable electricity generation while protecting the County's open spaces and helping to make communities more equitable and more resilient to climate-

related disruptions to the power grid. To accelerate the transition to a clean energy system while protecting our environment and people, the County is working to adopt policies that continue the growth of solar power on government-owned facilities and on private property.

Action items in this approach are projected to reduce carbon pollution by 4,600,000 metric tons of CO<sub>2</sub>e if fully implemented.

## WHAT WE HAVE ACCOMPLISHED

The County is making progress in advancing solar energy on County-owned facilities with the first of three major roof top solar installations at the North Dade Regional Library. Moreover, the County supports efforts to make solar more affordable and accessible communitywide through solar cooperatives and an official partnership with the Solar and Energy Loan Fund (SELF), which offers financing for property retrofits based on the ability to repay rather than credit scores, expanding opportunities to property owners who otherwise might not be able secure reasonable rates.

## WHAT IS NEXT

Miami-Dade County is currently developing a “Request for Proposals” (RFP) for solar power at County facilities to solicit proposals from the community and select a vendor to install 18.6 MW of roof- or ground-mounted solar power at up to 30 County facilities. This effort will build on “lessons learned” during the County’s first three large-scale rooftop solar projects at North Dade Regional Library, South Dade Regional Library, and the Metrowest Detention Center. The RFP represents an important step in the County’s goal to utilize its buildings to produce energy on-site and is an ambitious expansion of the existing portfolio of solar power installations at County facilities.

Beyond this RFP, the County continues to explore innovative opportunities to expand solar power generation. For example, solar panels will be installed on the Children’s Courthouse and Graham buildings as part of an energy performance contract with Ameresco, and separately, Miami International Airport is including solar PV as part of the terminal-wide roof replacement project. Moreover, the County is currently evaluating the feasibility of installing “floating” solar installations in bodies of water and pairing future installations of electric vehicle charging stations with solar power generation to allow for “zero emissions” when charging vehicles. Furthermore, to support resilient energy supplies for local government operations, the County wants to begin pairing on-site solar installations with batteries to provide power storage and backup supply that will help ensure continuity of operations even when sunlight is not available at night and during or after a hurricane or storm.

### **COMMUNITY HIGHLIGHT: Miami-Dade lights up County operations with solar**

In the Summer of 2022, installation of large-scale solar installations began at three buildings, including the North Dade Regional Library, South Dade Regional Library, and the Metrowest Detention Center. The County’s roof-top solar pilot project will produce a combined total of 1.4

*The first large-scale solar installation on a county owned building at the North Dade Regional Library.*





MW of solar electricity, which is the amount of energy needed to power approximately 190 homes per year. With this project, the County will benefit from longer-term operational cost savings and will avoid future energy cost increases.

This project provides valuable experience to help the County develop a larger procurement for on-site solar installations (a Request for Proposal or RFP) and allows County staff to better understand the long-term economic and resilience benefits along with design and financing considerations related to large-scale on-site solar power installations.

Although this is a county project, the community also benefits since rooftop solar lessens the burden of electricity demand on the power grid and mitigates the heat island effect.

► **COUNTY HIGHLIGHT: Retrofits get a boost through the Solar and Energy Loan Fund (SELF)**

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**SELF** 305-502-1814 [solarenergyloanfund.org](http://solarenergyloanfund.org)

PROUD PARTNER **MIAMI-DADE COUNTY**

In June of 2022, thanks to a grant from the Board of County Commissioners, the nonprofit SELF (Solar and Energy Loan Fund) was able to hire a loan officer to focus on the Miami-Dade community. As a nonprofit Green Bank, SELF offers affordable financing for property improvement projects, such as high-efficiency air conditioners, roof repairs, solar PV panels, hurricane shutters, impact windows, septic-to-sewer conversions, and more.

As a federally certified Community Development Financial Institution (CDFI), SELF focuses on serving low-to-moderate-income property owners. SELF recently developed new lending programs for landlords and green builders aiming to retrofit older buildings or build new affordable housing projects. SELF projects that it can scale operations to provide \$3 million in financing for more than 250 sustainable property renovation projects in Miami-Dade County.

These projects improve residents' safety, health, and quality of life by safeguarding them from extreme weather events while reducing their electric bills and home insurance rates.



## ►► **COMMUNITY HIGHLIGHT:** Residents leverage buying power through Solar Co-Ops



*Solar panels are installed on a solar co-op members home.*



*Solar co-op member in South Dade showcases her new solar panels.*

On April 13, 2022, Mayor Daniella Levine Cava kicked off the **2022 Miami-Dade Solar Co-Op** in partnership with the nonprofit group **Solar United Neighbors** (SUN) of Florida, the 11th cooperative (co-op) in Miami-Dade since the first one was initiated in 2017. SUN solar co-ops provide support and technical assistance to residents and small business owners interested in learning about solar energy. Co-op membership is free, and members who sign solar contracts as part of a co-op group are able to leverage their group numbers to solicit bulk discounted pricing through a competitive, comprehensive bidding process facilitated by Solar United Neighbors.

The 2022 resident partnership was the largest solar co-op in Miami-Dade so far, with 258 co-op members signing up. SUN has helped 218 Miami-Dade property owners install on-site solar, resulting in more than \$5 million of economic investment, 118 jobs, and 2.3 MW of electricity, which will lead to \$9.9 million saved on electricity bills over 25 years and an associated 69 million tons of CO<sub>2</sub>e offsets over the same period. SUN has also helped educate more than 2,400 property owners through information sessions and educational emails. In 2023, the County is partnering again with SUN Florida for another co-op, which launched in March.

**APPROACH 3:****BUILD ULTRA-LOW ENERGY BUILDINGS**

**Approach update:** Although there are no ultra-low energy buildings in Miami-Dade County, updates to the County's Sustainable Buildings Program (SBP) have helped to advance standards for construction projects that are owned, operated, or financed by Miami-Dade County, moving closer to the ultra-low energy buildings standard.

**OVERVIEW**

Ultra-Low Energy Buildings are structures that could produce as much energy as they consume with the addition of on-site renewables. While currently there is no such example in Miami-Dade, the County is taking steps in this direction. Since the Climate Action Strategy was launched in 2021, the County has updated the Sustainable Buildings Program (SBP) to help ensure local government buildings and operations are utilizing the best standards for energy efficiency and resilient design. Looking to the future, we will continue to refine these requirements as new best practices develop so that all new County facilities achieve Ultra-Low or Net-Zero emissions in their operations.

The SBP is a model that can be replicated throughout the community in the private sector as well or used as a template for other municipalities to develop similar policies. However, many buildings in Miami-Dade are beyond the County's direct control, so we continue to encourage

the 34 municipalities within the County, all developers, and everyone in the community to pursue the most efficient building standards possible, either voluntarily or through structured programs such as LEED and Envision.

Action items in this approach are projected to reduce carbon pollution by 35,000 metric tons of CO<sub>2</sub>e if fully implemented.

### **WHAT WE HAVE ACCOMPLISHED**

On Sept. 1, 2022, the Board of County Commissioners approved updates to both the Ordinance and Implementing Order for the Sustainable Buildings Program. These changes help to modernize the SBP and streamline the process for County projects to comply with the latest requirements and best practices about resilient and sustainable building and infrastructure design.

The revised Sustainable Building Program also enhanced definitions and standards in many ways, by:

- Clarifying that green building requirements apply to public projects including public/private partnership projects.
- Expanding applicability to Miami-Dade County infrastructure projects using the Envision Rating System.
- Adding further resilience and sustainability requirements, known as a “Prescriptive Path,” to provide consistent sustainability goals to all County projects, even if they do not need to pursue LEED or Envision certification.
- Clarifying the procedure for requesting a substitute standard and providing a new BCC waiver process.

Another step in this direction is the modification of the Florida Building Code to require specific types of roofs to be “cool roofs,” which increase the reflectance of the sun’s rays making the building cooler and consequently decreasing energy consumption. In 2022, Miami-Dade spearheaded this effort together with Broward County to modify the Florida Building Code affecting low-slope commercial roofs in Climate Zone 1A, which consists of seven counties in South Florida. If approved, starting on January 1, 2024, low-slope commercial roofs of new buildings in climate zone A will have to be built utilizing “cool roof” standards, thus saving energy for the building, and decreasing the urban heat island effect.

### **WHAT IS NEXT**

Miami-Dade will work toward identifying and launching an ultra-low-energy building pilot project in a County-owned facility. Once the pilot is built, the Office of Resilience will monitor electricity and water usage in that building for at least one year and write a detailed case study on best practices and lessons learned in ultra-low energy construction. These concepts will then be



incorporated into the next Sustainable Buildings Program Update and eventually codified through County ordinances or resolutions. Our goal is to transition all new County buildings to ultra-low energy by 2030.

► **COUNTY HIGHLIGHT: With the goal set for excellence, Miami-Dade earns LEED for Cities Gold Rating**



*Mayor Levine Cava accepts LEED for Communities Gold Award from the USGBC.*

In December of 2021, Miami-Dade County received a LEED for Cities and Communities Gold certification from the U.S. Green Building Council (USGBC). LEED, or Leadership in Energy and Environmental Design, is the world's most widely used green building rating system, and Miami-Dade is now part of a growing group of jurisdictions that have been certified in the nation and in the region.

LEED is designed to help buildings, communities, and cities achieve high performance in key areas of human and environmental health. The County achieved LEED Gold certification for implementing practical, measurable strategies and solutions aimed at improving sustainability and the standard of living for residents. LEED enables Miami-Dade to measure and track outcomes that are evaluated against key metrics including energy, water, waste, transportation, education, health, safety, prosperity, and equitability.

Miami-Dade County joins a global network of more than 100 certified cities and communities. Other LEED-certified communities include Resilient305 partner cities of Miami and Miami Beach and Regional Climate Change Compact partners, Palm Beach, and Broward counties.

► **COUNTY HIGHLIGHT: Miami-Dade Fire Rescue Department sets the bar high with ultra-low energy buildings**

Miami-Dade County's Fire Rescue Department (MDFR) has been an early adopter and leader in building low-energy buildings. While the County does not have any net-zero energy buildings yet, MDFR has been committed to meeting the highest standards in the design and construction of new buildings. Currently, there are seven new fire stations – Stations 4, 5, 6, 9, 17, 18, and 63 – in the design or early construction phases, and each



*Fire Station 18 is designed to have 40 – 50% of its energy needs come from solar.*

includes resilience and sustainability elements such as high efficiency, solar, and a minimum of LEED Silver Certification. Pictured here, Fire Station 18 will be built with 40%- 50% of the building's electricity needs to be met by solar power.

### **COMMUNITY HIGHLIGHT: Schools prep for a more resilient future with net-zero-ready buildings**

Two net-zero energy-ready schools are coming to Miami-Dade County. High-performance net-zero energy-ready schools are so energy efficient that a renewable energy system could offset most or all the school's annual energy use.

In 2022, ground for the buildings was broken at Ammons Middle School in South Dade and Southside Prep Academy, a Brickell area middle school, with an expected opening by August 2023. Construction at both sites uses advanced techniques around the walls, windows, and ventilation systems to keep as much refrigerated air as possible inside and reduce the amount of energy needed to cool the buildings.



*Architectural rendering of a net-zero-ready school.  
Photo credit: Miami-Dade County Public Schools*



## LAND USE & TRANSPORTATION GOALS



### 4. REDUCE TRANSPORTATION-RELATED FUEL CONSUMPTION

- SHIFT 10% OF TRANSPORTATION MODE AWAY FROM SINGLE OCCUPANT VEHICLES BY 2030
- ELECTRIFY THE COUNTY FLEET: 80% OF LIGHT VEHICLES AND 50% OF PUBLIC TRANSIT BUSES BY 2030
- TRANSITION 30% OF COMMUNITYWIDE VEHICLES TO ELECTRIC POWER BY 2030
- REDUCE GREENHOUSE GAS EMISSIONS FROM MIAMI INTERNATIONAL AIRPORT AND PORTMIAMI OPERATIONS BY 50% AND 25%, RESPECTIVELY BY 2030



### 5. EXPAND AND PROTECT GREEN AND BLUE SPACES

- INCREASE COMMUNITY-WIDE TREE CANOPY TO 30% COVERAGE BY 2030. [COMMUNITY RECOMMENDATION ✓]
- ENSURE THAT ALL COUNTY FACILITIES WITHIN THE URBAN DEVELOPMENT BOUNDARY (UDB) (PER 2013 DELINEATION) SHALL ATTAIN AN AVERAGE OF AT LEAST 30% CANOPY COVERAGE AND ALL COUNTY FACILITIES OUTSIDE THE UDB SHALL ATTAIN AN AVERAGE OF AT LEAST 50% CANOPY COVERAGE BY 2030
- REDUCE POLLUTANT LOADS TO SURFACE WATERS, INCLUDING BISCAYNE BAY, TO FACILITATE RECOVERY OF SEAGRASSES TO HISTORIC LEVELS [COMMUNITY RECOMMENDATION ✓]
- DOUBLE THE TOTAL NON-WETLAND ACREAGE OF NATURAL HABITAT IN PRESERVATION

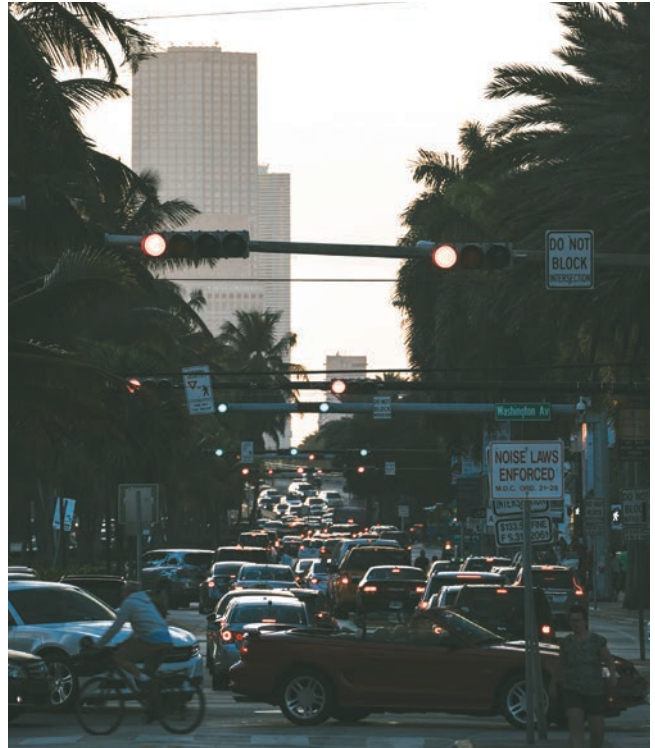
### APPROACH 4:



## REDUCE TRANSPORTATION-RELATED FUEL CONSUMPTION

## OVERVIEW

Transportation-related activities produce the largest amount of carbon pollution in Miami-Dade County. Most transportation-related carbon pollutants (emissions) are from regular cars and trucks driven by everyday people. Reducing fuel consumption leads to many benefits, such as individual cost savings and reduced air pollution and associated health impacts. The shift to fuel sources such as electricity and green hydrogen generated from renewable energy for vehicles and equipment is important, but shifting trips taken from cars to walking, scootering, biking, or public transportation can also greatly reduce carbon pollution emissions. How we build is key to reducing these pollutants and ensuring the long-term resilience of Miami-Dade County. There is broad consensus that land use development intensity and the type of development also affects carbon pollution. Studies indicate that people drive generally between 20 to 40 percent less in more compact developments supported by mass transit<sup>2</sup>. Not only is compact development more fuel efficient, but it also allows for more land to be maintained in a more natural state or for environmental protection purposes that provide carbon sequestration benefits.



Action items in this approach are projected to reduce carbon pollution by 3,600,000 metric tons of CO<sub>2</sub>e if fully implemented.

## WHAT WE HAVE ACCOMPLISHED

Miami-Dade County's Department of Transportation and Public Works (DTPW) has purchased or has received approval to purchase a total of 175 electric buses by 2024. Once all the buses are put into service, they will represent over 10 percent of DTPW's fleet. The County currently has 53 electric buses operating throughout its service area in addition to three charging depots with chargers to power the buses. Miami-Dade County is using a mix of funding sources to pay for the buses and chargers including, but not limited to, grants from the Federal Transit Administration, Florida Departments of Transportation and Environmental Protection, and County funds. In September 2022, the State of Florida announced a \$19.8 million grant award to Miami-Dade County for the purchase of electric buses – the largest local government award recipient in the State. Many of these buses will provide Bus Rapid Transit (BRT) service on the South Dade TransitWay, one of the Strategic Miami Area Rapid Transit (SMART) Program corridors currently under construction. Depending on usage and other factors, each bus that replaces a diesel bus could reduce up to approximately 230,000 pounds of greenhouse gases every year that the bus is running and will also provide operational and maintenance savings over the long term.

<sup>2</sup> Urban Land Institute, Smart Growth America, the Center for Clean Air Policy, and the National Center for Smart Growth. Growing Cooler: The Evidence on Urban Development and Climate Change. 2008.



The County's Department of Solid Waste Management also purchased its first all-electric garbage truck in 2022 and is evaluating the operation and fueling in order to facilitate future purchasing.

Regarding the County's light fleet, other departments have made great strides in transitioning their traditional vehicles to all-electric. As of January 2023, a total of 41 electric light fleet vehicles are actively being used, with additional purchases underway. The number of electric vehicles that the County can purchase has been hampered by limited supply from the manufacturers and other supply chain issues.

While the County is focused on transitioning its own fleet of vehicles to electric, it is also imperative that the wider community adopts EVs as a strategy to reduce carbon pollution. In September of 2022, the South Florida Regional Planning Council and Miami-Dade County Office of Resilience hosted a Drive Electric event for the public to explore all types of electric vehicles, from cars and trucks to scooters, bikes, and buses.

In 2022, the County continued efforts to support compact, transit-oriented development through planning and implementation of the rapid transit corridors contained in the SMART Program as well as expansion of the Rapid Transit Zone regulations that will provide for transit-supportive land uses along the rapid transit corridors.

The County has also been working to make our community safer and friendlier for bike riders. As of December 2022, Miami-Dade had implemented 11.47 miles of bike lanes in the downtown area as well as 5.95 miles of paved trails or off-road paths.

## WHAT IS NEXT

The federal budget reconciliation act, commonly known as the Inflation Reduction Act of 2022, is providing billions of dollars in funding and tax credits for residents and businesses to help reduce carbon pollution associated with transportation choices. For example, the IRA extends the tax credit of \$7,500 for new electric vehicles (EVs) and establishes new tax credits for used EVs and for commercial EVs. In addition, the IRA provides \$3 billion for municipalities to invest in improving equitable access to efficient, low-carbon transportation. Assisting in this major shift, many local governments in Miami-Dade County are already thinking about how to use these funds to improve neighborhood walkability and facilitate transit and micro-mobility access.

## COUNTY HIGHLIGHT: Miami-Dade PortMiami Shore Power project



*Shared Shore Power Based on Preferential Berthing at PortMiami.*

PortMiami is installing the first shore power system in the southeastern United States, specifically to reduce greenhouse gas emissions and demonstrate leadership in sustainability. Providing shore power to cruise ships is a significant step toward achieving Miami-Dade County's goal to cut overall emissions by 50% by 2030 and achieve net zero by 2050. Shore power connectivity allows cruise vessels to use electric power while docked at PortMiami, thereby reducing carbon emissions.

Connecting the landside shore power equipment to the vessels requires a mobile cable management system. Every vessel has a different location for the "plug" to go, including variations in both height and distance from the landside shore power equipment. PortMiami is installing a trench where the power cables will be placed and then attached to a mobile vehicle to allow for movement along the dock to align with each cruise vessel for maximum flexibility. Five ship berths will have access to the shore power system, and the upgrades will allow for three cruise ships to simultaneously use shore power at any given time.

This project was undertaken in collaboration with six cruise industry partners, Carnival Corporation, MSC Cruises, Norwegian Cruise Line, Royal Caribbean Group, Virgin Voyages, Disney Cruise Line and Florida Power & Light. The project is scheduled to be completed by December 2023 at a total cost of approximately \$90 million. PortMiami received \$2 million in grant funds from the U.S. Environmental Protection Agency's Diesel Emissions Reduction Act (DERA) Program and \$12.5 million in grant funds from the State of Florida Department of Transportation (FDOT) for the shore power project.

### ►► **COMMUNITY HIGHLIGHT: Electrification of Miami-Dade County Public Schools' bus fleets**



*M-DCPS is investing in healthier, more cost-effective student transportation with electric buses.*

In support of its 100% clean energy goal, Miami-Dade County Public Schools System (M-DCPS) has begun to electrify 15% of its school bus fleet, building on resources and consulting services provided by the World Resources Institute. By the end of 2022, M-DCPS had purchased 10 electric school buses and plans to buy an additional 30-40 electric buses in the next few years. The buses will be charged at six locations throughout the community.

In the long term, electric buses are cheaper because they have 80 percent lower costs for fuel and maintenance. In addition, electric buses provide tremendous health benefits for M-DCPS bus drivers and the 45,000 Miami-Dade students who ride the school buses daily. Because electric school buses have no tailpipe emissions, they not

only reduce carbon pollutants that cause climate change, but they also reduce student, driver, and public exposure to other air pollutants that cause illness and disease and harm students' cognitive development. In fact, reducing students' exposure to air pollution from school buses can have a significant positive effect on student test scores.

M-DCPS is paying for the new electric buses and chargers using State grant money received through a 2016 settlement between Volkswagen and the U.S. Department of Justice over emissions violations. M-DCPS is required to provide a 30% cost share, and so far, has invested \$2.1 million in purchasing the electric buses with an additional expected investment of \$14 million.



#### APPROACH 5:

### EXPAND AND PROTECT GREEN AND BLUE SPACES

#### OVERVIEW

Climate can affect and be affected by changes in land cover (the physical features that cover the land, such as trees or pavement) and land use (such as industrial or recreational uses of land areas). Decisions about land use, cover, and management significantly influence the County's ability to slow, halt, and adapt to climate change. Reducing carbon pollution concentrations can, in part, be achieved by increasing the amount of land (green) and coastal (blue) areas available for carbon storage.

Action items in this approach are projected to reduce carbon pollution by 951,000 metric tons of CO<sub>2</sub>e fully implemented.



#### WHAT WE HAVE ACCOMPLISHED

In 2022, Miami-Dade County Parks, Recreation and Open Spaces (PROS) Department acquired seven new public park sites and four new Joint Use Agreements, for a total of 27.86 additional park acres, including new and improved park facilities, and expanded access to parks, playgrounds, pickleball courts, ballfields, and other park amenities, in support of the Miami-Dade Parks and Open Space Master Plan.

PROS also completed the restoration of the Matheson Hammock Park Atoll Pool, damaged by Hurricane Irma in 2017. The climate resilient design is aligned with sea level rise recommendations to strengthen the area against future storm and flood events.



The City of Doral completed two park projects in 2022 financed by a special General Obligation Parks Bond approved by voters in 2020. Doral White Course Park contains both a putting green and a multi-purpose green space among other features. The Doral Cultural Art Center project includes multiple outdoor courtyards, a multi-purpose greenspace, and public garden spaces.

Miami-Dade County's Office of Resilience and its external partners completed a Miami-Dade Heat Vulnerability Assessment and Geographic Mapping Report in 2022 identifying urban heat island areas that will now be prioritized for future tree planting efforts.

The Miami-Dade County Division of Environmental Resources Management (DERM) continued leading the analysis for Biscayne Bay Southeastern Everglades watershed restoration. Accomplishments in 2022 included the development and modeling of restoration options and publishing performance measures to establish which alternatives will provide the most benefit to Biscayne Bay.

In September 2022, the South Florida Water Management District (SFWMD) Governing Board approved the County's Biscayne Bay Coastal Wetlands (BBCW) Project, thereby officially including it as part of the Comprehensive Everglades Restoration Plan (CERP). The BBCW Project restores freshwater flows to southern Biscayne Bay and Biscayne National Park while improving salinity distribution near the shore. It also restores historical freshwater wetland habitats adjacent to the Bay, supporting nursery habitats for key marine wildlife, including shrimp, shellfish, and fish.

DERM completed the acquisition of another 553 acres of environmentally endangered lands in 2022, leading to a total of more than 28,000 acres under the management of the Environmentally Endangered Lands Program.

## WHAT IS NEXT

The Miami-Dade County Division of Environmental Resources Management (DERM) established a monitoring protocol and installed monitoring equipment for the Card Sound Road Canal Plug Project, designed to restore wetlands and establish a saltwater intrusion barrier to protect the drinking water supply. The Year 1 report for this monitoring effort was completed in 2022. DERM has documented wetland improvements that are vital for aquifer recharge. Next year, it is anticipated that monitoring will confirm water quality improvements.

In addition, DERM's coastal restoration of the Cutler Marsh and Mangrove area in 2023 will initiate stakeholder engagement, consultations with permitting agencies, updating of site and wildlife surveys, refining cost estimates, and development of a project phasing schedule.

To reduce the impact of extreme heat events and improve carbon sequestration, Miami-Dade County has set the goal of attaining 30 percent tree canopy coverage by 2030. The County increased the tree preservation and planting budget in 2022-23 by \$2.5 million to support the expansion of existing programs. Since 2020, the County has more than tripled its fiscal commitment to a total of \$4.5 million in FY 2022-23 to tree planting, maintenance, and preservation.

**COUNTY HIGHLIGHT:** Enhancing Native Habitat and Community Partnerships through Historic Hydric Hammock Reforestation



*Reforestation of the historic hydric hammock.*



*Pulling invasive plant species prior to reforestation.*

One of the largest reforestation projects that Miami-Dade County's Department of Environmental Resources Management (DERM)'s Environmentally Endangered Land's (EEL) program has initiated in recent years coincided with the first implementation year of the County's Climate Action Strategy. This reforestation milestone involved the planting of nearly 5,000 trees at and adjacent to Matheson Hammock, part of a multiyear ecological restoration project in this designated Natural Forest Community area. The area is also critical habitat for Florida's only federally endangered fern, the Florida Bristle Fern, and has been the focus of a study by DERM and the United States Fish and Wildlife Service (USFWS) since 2015 to better understand forest function in urban habitats.

Several long-term community partnerships were instrumental in setting the stage for this successful restoration. In prior years, the EEL Program partnered with Fairchild Tropical Botanical Garden to assess how to best restore the impacted West Matheson Hammock Forest and adjacent areas. DERM also obtained a grant from the Florida Fish and Wildlife Commission and embarked on an intensive yearlong site preparation effort. The Girl Scouts of Tropical Florida (GSTF) partnered by fundraising and removing invasive plant species in a contiguous forested area and additional financial support was received from the Coral Gables Garden Club, the City of Coral Gables, Citizens for a Better South Florida, Arbor Day Foundation, Miami-Dade County Commission District 7 and the Coral Gables Community Foundation. All these partners, together with DERM's EEL and Adopt-a-Tree programs ensured the successful planting of imperiled rockland and hydric hammock tree species in the focus area.

These trees will help produce the oxygen we breathe, filter water, protect property from storms, absorb storm and floodwaters, provide refuge from nearby “heat islands,” and support birding, hiking, and other recreational forest experiences. The trees will absorb and store carbon pollution that helps curtail climate change all while benefitting an endangered fern. These restoration efforts also enhance the natural environment at the Girl Scouts of Tropical Florida’s Camp Mahachee, where 60 percent of the campers are from low-income neighborhoods.

►► **COMMUNITY HIGHLIGHT: Town of Cutler Bay preserves Cutler marsh and mangrove parcel to enhance community resilience and partners on National Fish and Wildlife Federation Grant**

In 2020, the Town of Cutler Bay’s Council unanimously approved the purchase of an 8.43 acre parcel needed to restore and protect coastal marsh and mangroves in an area called the North Cutler Wetlands. The Council and local activists had the vision to preserve this vacant coastal land for its environmental value and to further the Town’s resiliency efforts. The acquisition greatly complemented the Town’s resilience objectives, as the parcel, along with adjacent coastal wetland tracts, acts as a buffer to protect the community from storms and the threat of sea-level rise, as well as facilitates carbon sequestration. After the purchase, the Town worked with Miami-Dade County to put the parcel on the Environmentally Endangered Lands Program’s acquisition list, giving the County the ability to fast-track construction of restoration features.



*Volunteers with the Livable Cutler community group conduct restoration work on the portion of the restoration site owned by the Town of Cutler Bay. (Credit: Eduardo Varona)*

Over the next few years, the Town of Cutler Bay supported Miami-Dade County and the South Florida Water Management District with a broader focus on acquiring additional adjacent parcels and developing conceptual restoration plans. Fast forwarding to 2022, this multi-jurisdictional collaboration led to the County’s application to the National Fish and Wildlife Foundation for a \$330,000 grant that was ultimately awarded in December 2022 to accelerate the restoration of a 135 acre area, including the Town of Cutler Bay’s 8.43 acre parcel. The grant will advance the existing conceptual restoration designs to the final design stage.

The restoration of coastal wetlands, mangroves, and forests adjacent to Biscayne National Park will enhance carbon sequestration in addition to coastal protection and resilience from hurricanes and sea level rise for neighboring communities, like the Town of Cutler Bay. It also will benefit wildlife such as the American crocodile, bobcats, roseate spoonbills, and numerous other wading and migratory birds. One ongoing U.S. Army Corps of Engineers (USACE) feasibility



study found that restoration for this area would reduce storm damages and would have a high benefit-to-cost ratio of 8 to 1. Another USACE feasibility study identified the restoration area as a promising one for habitat and water quality improvements. Restoration of this coastal wetland footprint was part of the Comprehensive Everglades Restoration Plan (CERP) authorized by Congress in 2000 and the NFWF planning grant is a huge step forward to realizing this original vision.



## WATER & WASTE GOALS



### 6. CONVERT WASTE TO ENERGY

- 48 GWH/YEAR OF ELECTRICITY FROM COGENERATION AT WASTEWATER PLANTS BY 2030
- 50% OF NON-RECYCLED GARBAGE CONVERTED TO ENERGY BY 2030
- 10% INCREASE IN RECYCLING RATES AND CUT NON-RECYCLABLES "CONTAMINATION" IN HALF



### 7. REDUCE WASTE AND WATER USE

- REDUCE LANDFILL WASTE PER PERSON 50% BY 2030
- REDUCE WATER CONSUMPTION PER PERSON 30% BY 2030



### APPROACH 6:

## CONVERT WASTE TO ENERGY

### OVERVIEW

In its transition towards renewable and carbon-free energy sources, Miami-Dade County has several programs which convert waste into energy. Capturing energy from County and community waste streams reduces the need for energy from other sources, thereby reducing carbon pollution and total energy costs. Three main County programs converting waste products to energy are:

1. Wastewater Biogas
2. Landfill Biogas
3. Garbage Waste-to-Energy



The first program, implemented by Miami-Dade Water and Sewer Department (WASD), uses anaerobic digestion as part of the County's wastewater treatment process to produce renewable biogas. Approximately 300 million gallons of wastewater are collected and processed daily in the County's three district wastewater treatment facilities. The renewable biogas produced from digested wastewater biosolids reduces energy consumption and costs from other sources and produces enough energy to power approximately 3,000 homes for one year.

The second program, implemented by Miami-Dade Department of Solid Waste Management (DSWM), collects landfill gas (LFG) at its two main County landfills. LFG is a natural byproduct of the decomposition of organic material deposited into landfills and is composed mainly of carbon dioxide and methane. Flaring or combusting the methane in cogeneration engines reduces the County's greenhouse gas emissions impact. Utilizing all currently produced LFG can provide enough energy to power approximately 1,500 homes for one year.

The third program, also implemented by Miami-Dade Department of Solid Waste Management (DSWM), converts County garbage to electrical power at its Waste-to-Energy facility. This waste would otherwise be sent to landfills, therefore eliminating methane generation that would have occurred from landfill waste decomposition.

Action items in this approach are projected to reduce carbon pollution by 552,000 metric tons of CO<sub>2</sub>e if fully implemented.

## WHAT WE HAVE ACCOMPLISHED

Over the past year, WASD has been working on a multi-year anaerobic digester rehabilitation project at its wastewater treatment plants that will reduce the amount of harmful methane leaked into the atmosphere while improving renewable biogas production to be used to produce electricity and heat.

A new WASD Fats, Oil, & Grease (FOG) facility is in the design phase and is planned to finish construction in 2024. This facility will allow FOG to be sent to WASD digesters to produce renewable biogas to produce both electricity and heat for the wastewater facility. Currently, these wastes are processed and landfilled without any energy capture.

WASD is working with its local electrical utility to expand its Interconnection Agreement, which will allow it to increase the amount of electricity it produces from renewable biogas at its wastewater treatment plant. Currently, WASD is only permitted to generate about four megawatts of renewable energy despite having the capacity to generate up to twelve megawatts. The additional energy produced through cogeneration is expected to provide enough energy to power an additional 3,000 homes for one year.

The County's Waste to Energy (WTE) plant, operated by Covanta, ceased to operate in February of 2023. The plant processed approximately 685,000 tons of municipal garbage a year and produced up to 77 megawatts of electricity, enough to power the facility's operations and provide power to 40,000 homes. After more than 40 years of operation, this plant has reached the end of its use. The County is exploring the next steps, in the context of our new Zero Waste Strategy.

### WHAT IS NEXT

WASD will continue to develop its biogas production and utilization through the injection of FOG into its digesters while reducing digester methane leaks. WASD will finalize its interconnection agreement to expand its cogeneration capacity from 4.0 MW to 12.0MW.

WASD is also in the process of upgrading its biogas secondary conditioning system and biogas storage which will help facilitate the use of landfill biogas.

The County is exploring the next steps for the development of future facilities to handle the County's waste. The County is evaluating alternatives for siting and new technologies to make an informed decision regarding the type of systems that will best serve our community in the future. The present circumstances create an opportunity for the selection of technology and practices that align with the County's Zero Waste Initiative. The County Commission has made a strong commitment to recycling and to creating a regional approach to waste management that includes diverting waste from landfills.

### ► **COUNTY HIGHLIGHT: Department of Solid Waste Management teams with the Water and Sewer Department to transform potent landfill gas into a viable energy solution**

Landfill gas (LFG) is a natural byproduct of the decomposition of organic material in landfills. LFG is composed of roughly 50 percent methane (the primary component of natural gas), 50 percent carbon dioxide (CO<sup>2</sup>), and a small amount of non-methane organic compounds. Methane is a potent greenhouse gas 28 to 36 times more effective than CO<sup>2</sup> at trapping heat in the atmosphere per the latest Intergovernmental Panel on Climate Change (IPCC) assessment report (AR5).

Miami-Dade Department of Solid Waste Management currently employs an LFG extraction system as part of its landfill operations. DSWM, in collaboration with Miami-Dade Water & Sewer Department (WASD), has initiated the use of landfill gas for energy production. Working together in the past year, DSWM and WASD have serviced and upgraded the LFG extraction and compression systems at the South Dade landfill to better use the gas



*South Dade Landfill.*



to produce electricity and heat. Currently, LFG quality is being monitored by WASD to ensure compatibility with existing equipment. WASD is also beginning to mix LFG with WASD-produced biogas to generate electricity and heat instead of buying natural gas.



#### APPROACH 7:

### REDUCE WASTE AND WATER USE

#### OVERVIEW

The County recognizes that traditional methods of solid waste and wastewater management generate GHG emissions, and those emissions have increased with population growth and aging facilities. Reducing GHG emissions from these sources can be attained by creating less waste and using less water.

While resource conservation practices have been a part of County operations for decades, the County is now exploring a comprehensive Zero Waste Strategy, in which GHG emissions are considered at all stages of procurement, consumption, and disposal of resources. In fact, the way we extract, use, and dispose of all the materials we consume is not only a source of greenhouse gas emissions but also a driving force for habitat degradation, biodiversity loss, and all types of pollution.



With respect to drinking water, extracting water from the Biscayne Aquifer and treating and distributing it throughout the community uses a significant amount of electrical and fuel energy. Treating wastewater is also extremely energy intensive. Reducing water consumption reduces wastewater production, thereby reducing associated carbon emissions and operational costs.

Action items in this approach are projected to reduce carbon pollution by 100,000 metric tons of CO<sub>2</sub>e if fully implemented.

#### WHAT WE HAVE ACCOMPLISHED

In October 2022, the County Mayor initiated the development of a Zero Waste Strategy which will focus on eliminating waste throughout county operations and in the community.

The County, under leadership from the Strategic Procurement Department, is finalizing updates to its Green Purchasing Guide which provides environmentally preferable purchasing guidelines to County departments to support the County's progress towards comprehensive sustainability and resilience. One of the key goals of this guide is to reduce carbon pollution associated with climate change by decreasing waste and resource inefficiencies.

DSWM has a robust recycling program and has been working diligently this year to increase the recycling rate with active public information campaigns through various media outlets.

Through a research and development pilot demonstration, WASD has been working on the volume reduction of and hydrogen energy capture of biosolid wastes.

WASD's Water Sense rebate program has installed over 3,300 high-efficiency water fixtures and toilets, leading to 50,000 (0.05 million) gallons per day of water savings.

WASD, in collaboration with the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) Extension program, implements a Landscape Irrigation Evaluation program for both private and public sector property owners, resulting in water savings. Please see the highlight below for more details.

WASD's aggressive municipal leak detection program uses a complicated and extensive network of permanent and portable equipment to monitor leaks throughout the County's water distribution network. Approximately 600 leaks on main distribution lines were located with an approximate water savings of 2,000,000 gallons.

## WHAT IS NEXT

The County has begun working on a Zero Waste Strategy that will provide a roadmap for the County, residents, businesses, and visitors to divert 90% of our waste from landfills and recirculate used resources or waste materials. The plan will be implemented primarily through collaboration and partnerships, encouraging innovations in the community that focus on education, and public-private partnerships.

For water use reduction, WASD will continue its water conservation, landscape irrigation, and leak detection programs.

WASD has initiated its plan to adopt "smart" automated meters, known as Advanced Metering Infrastructure (AMI) throughout its service area. Through AMI and associated data analytics capabilities, WASD expects to be able to further reduce County water use.

In addition, WASD in partnership with Black and Veatch has announced the Effluent Energy Recovery Systems (EERS) project for industrial water reuse. The project will provide reused water for cooling buildings and energy-intensive processes at the treatment plants. The new approach utilizes the low temperature of the wastewater treatment plant (WWTP) effluent to cool plant processes using centralized heat exchangers and will cease the use of electrically powered cooling towers reducing 500,000 gallons/year of potable water.

### ► **COUNTY HIGHLIGHT: Substantial savings build up when free landscape irrigation evaluations help track every penny and drop wasted**

As part of countywide efforts to reduce water use and improve efficiency, WASD offers free landscape irrigation evaluations to single-family homeowners and large property owners (i.e. condominium associations, commercial properties, etc.) in order to reduce water waste.

This work is done in collaboration with the University of Florida Institute of Food and Agricultural Sciences (IFAS), along with the College of Agricultural and Life Sciences (CALS) and the Florida Agricultural Experiment Station (UF/IFAS Extension).

UF/IFAS WASD's Landscape Irrigation Rebate Program (LIRP) consists of pre- and post-landscape evaluation assessments which are free to Miami Dade County property owners that have an existing, functioning, in-ground irrigation system in place. After pre-landscape evaluation assessments are conducted, property owners receive a report summarizing the pre-assessment along with resources that provide a calculation of the water-saving potential of the recommendations. Program staff also discuss recommendations with the property owner that would improve the efficiency of the system and what rebates are available for any retrofits and landscape improvements. In addition, UF/IFAS staff provide a list of certified landscape contractors familiar with the LIRP.



Post-assessments are scheduled when the property owner informs program staff that retrofits have been completed. Post-assessments consist of staff confirming retrofits are installed and all applicable rebates requested have been processed. Single-family homeowners can receive up to \$500/year for up to 5 years while all other properties can receive a maximum of \$2,850 per property. These properties include commercial, multi-family, hotels, and homeowners' associations. To date, 110 single-family homes and 33 large property owners have received water conservation rebates which resulted in a water savings of 84,584 gallons.

### ► **COUNTY HIGHLIGHT: HyBrTec converts biosolids into clean energy hydrogen**

Miami-Dade Water & Sewer Department (WASD) has a HyBrTec Biosolids-to-Hydrogen Research Development Pilot project currently underway. The intent of this grant research is to test and evaluate a new innovative HyBrTec Biosolids-to-Hydrogen process to reduce the volume of biosolids produced during wastewater treatment, and to convert the biosolids to beneficial products, primarily hydrogen. While this research is in its preliminary stages, it has the potential to impact the wastewater industry and biosolids handling by producing renewable green hydrogen and eliminating carbon emissions associated with biosolids transport and disposal.



*Central Wastewater treatment plant on Virginia Key.*



The HyBrTec system is being designed to continuously produce renewable hydrogen, green carbon dioxide, and heat from the biosolid feedstock elimination process. Each of these products can be used in a beneficial way, for example hydrogen can be used as a chemical commodity, or it can be used in a generator to produce electricity. Because biosolids are typically added to soil as a fertilizer due to their nitrogen and phosphorous content, rain and wind can wash them into our surface waters such as Biscayne Bay, and stimulate the growth of harmful algal blooms. Thus, this project also has the potential benefit of reducing toxic algal blooms that negatively impact our community, including our tourism industry.

A \$1.15 million Florida Department of Environmental Protection (FDEP) grant was awarded to Miami-Dade Water & Sewer Department (WASD) to fund this pilot research project. The project design and construction phase has almost been completed and the testing and analysis phase will soon begin at WASD's Central District Wastewater Treatment Plant.

### ► **COMMUNITY HIGHLIGHT: New Compost Accelerator Project will transform leftovers and yard clippings into organic fertilizer**

Approximately forty percent of Miami-Dade County's municipal waste stream is predominantly composed of organic food and yard waste. Most of this waste, a potentially valuable natural resource, is currently landfilled or incinerated and releases significant carbon pollution while burdening our waste management system.

There is growing demand for composting services in the County as demonstrated by new composting courses and programs. Now, through a US Department of Agriculture grant award in February of 2023, three small locally-owned composting companies, in partnership with Miami-Dade County, will be implementing a compost waste pilot program to jump-start composting as a business.

Over the next two years, Miami Dade County's Compost Accelerator Project will aim to streamline and simplify the permitting system for commercial composters in the County. It will provide support to the three composting companies to help them scale their operations to provide composting services in the community and to produce a composting product for local markets, for example, to replace fertilizer in County Parks. This accelerator will demonstrate viable pathways for commercial and municipal composting in Miami Dade County, with multiple benefits: decreasing carbon pollution from food sent to landfills, turning food waste into a valuable marketable product, creating a locally produced supply of compost to replace commercial fertilizers, and creating new jobs and economic opportunities.



*Compost for Life offers pickup services to Miami-Dade County residents, businesses, institutions, and event producers. Customers can claim a portion of their finished compost. The remaining compost is donated to a local community garden and local farmers.*

# INNOVATIVE TECHNOLOGIES - GREEN ECONOMY

Since the publication of the Climate Action Strategy in April of 2022, the County's economy – ranked the fastest-recovered in the nation – has grown with new investments, business relocations, and workers. Unemployment is low and opportunities are abundant, but costs are rising, and our community remain at the forefront of the climate crisis. Fortunately, the federal government has made unprecedented investments in climate action through the Infrastructure Investment and Jobs Act, the Creating Helpful Incentives to Produce Semi conductors and Science (CHIPS) Act, and the Inflation Reduction Act. Miami-Dade can tap billions of dollars to invest in renewable energy, energy efficiency, weatherization, resilient critical infrastructure, turning research into climate solutions, planting trees, and getting to zero waste -- and all these investments prioritize equitable outcomes.

Miami-Dade's FutureReady economic development strategy capitalizes on this momentum by working with the government, community, and the private sector to build a collaborative ecosystem for economic growth that is innovation-led, inclusive, and sustainable. The strategy focuses on workforce talent, small business support, and innovation.

Over the last year, Mayor Levine Cava has launched FutureReady programs to partner with companies and non-profits that are investing in climate action and the economy of the future. In addition, FutureReady technologies are being considered for rapid adoption.

## Advance workforce talent for the Climate Economy

- Invested \$15 million in Miami-Dade College's MDC Tech, to train the next generation of tech talent needed for the climate economy.
- Developed partnerships with the University of Miami and WATSCO to train the building efficiency and HVAC workforce.
- Joined with The Florida High Tech Corridor and over 60 partners to apply for \$15 million from the federal government to create the Coastal Resilience Engine for Sustainable Transformation (CREST), to accelerate Florida's innovation ecosystem by deploying advanced climate technologies to build more resilient coastal communities, drive job creation and develop regional talent in the transition to a low-carbon, resilient economy.

## Support small businesses in joining the Climate Economy

- Provided over \$1 million in BizUp grants to local startups, including two climate companies.
- Launched Strive305, a FREE resource hub that connects small businesses to resources.
- Hosted Seaworthy Collective as the County's first startup in residence.
- Provided a grant for the Solar and Energy Loan Fund (SELF), the only Green Bank in Florida, to expand its operations in Miami-Dade.
- Created the Climate Business Ecosystem Database.

## Unleash climate innovation

- Announced a \$9 million initial investment in the Miami-Dade Innovation Authority with a climate tech vertical to catalyze local innovation through public-private partnerships.
- Launched monthly Climate Tech Meetups with Opportunity Miami and the Beacon Council to build match innovators to resources.
- Received USDA funding for a Compost Accelerator that aims to increase the capacity of three compost companies by 50%.
- Released the Southeast Florida Climate Compact Regional Climate Action Plan 3.0 with an expanded focus on the climate economy and securing federal funding for implementation.

## FutureReady Technologies

- Floating Solar.
- Microgrids.
- Green Hydrogen.
- Energy and thermal energy storage.
- Floating offshore wind.
- Electric vehicle-to-grid to power critical infrastructure during emergencies with loss of grid power.

## NextEra Energy/Florida Power & Light - Real Zero Plan

Miami-Dade County's goal of net zero emissions by 2050 requires the elimination of all carbon emissions as a result of the combustion of fossil fuels. Even with the adoption and successful implementation of this Climate Action Strategy, there remains an emissions reduction gap which is mainly attributed to emissions from electricity generation and usage. Currently, the only way for the County to fully achieve its net zero goal is for grid electricity to also become emissions-free.

As of 2022, electricity provided by the County's electrical utility Florida Power & Light (FPL), owned by NextEra Energy, is comprised of a fuel mix of 67.4% natural gas, 19.6% nuclear, 6.1% purchased power, 4.1% solar, 2.7% coal, and 0.1% oil across the entire service territory. For the County to be able to reach net zero emissions by 2050, NextEra Energy would have to adopt a Net Zero strategy, modify its fuel mix, and eliminate all emissions from fossil fuel combustion. NextEra/FPL has announced the following corporate strategies that also align with the Climate Action Strategy:

- NextEra Energy plans to achieve 100% carbon emissions-free power for their electric grid by 2045 by scaling up the renewable energy portion of their fuel mix and including short-term and long-term energy storage solutions such as battery power. Thus, the fuel mix is projected to be comprised of solar, green hydrogen, renewable natural gas, and nuclear.



- › According to the utility, its Real Zero™ plan means eliminating carbon emissions from its operations without acquiring offsets or credits. FPL has the following 5-year checkpoints as part of its plan:
  - 2025 - 36% carbon emissions-free generation.
  - 2030 - 52% carbon emissions-free generation.
  - 2035 - 62% carbon emissions-free generation.
  - 2040 - 83% carbon emissions-free generation.
  - 2045 - 100% carbon emissions-free generation.
- As part of this plan, NextEra/FPL are leading many efforts such as:
  - › Installation of large-scale solar power plants.
  - › Installing one of the largest battery backup systems for a solar installation.
  - › Deploying smart grid technology and hardening their grid for improved reliability and resiliency.
  - › Investing in electric vehicle (EV) infrastructure, distributed generation, and hydrogen energy pilot projects, including the development of Florida's first green hydrogen project.

## ADDITIONAL INFORMATION

The NextEra/FPL Real Zero plan is an ambitious plan that seeks to transform a large portion of service territory source energy production. The scale and scope of Real Zero, including the necessary investment required to achieve its long-term goals, will be challenging. The County eagerly awaits key details on the practical steps to make Real Zero a reality especially with respect to the generation of electrical energy from considerable amounts of clean hydrogen. The County through the Office of Resilience will continue to collaborate with NextEra/FPL to address challenges with clean energy, greenhouse gas emissions reduction, and grid resilience.

The complete Climate Action Strategy, released on April 22, 2022, can be found here: [www.miamidade.gov/global/economy/resilience/climate-strategy/home.page](http://www.miamidade.gov/global/economy/resilience/climate-strategy/home.page).

The County's Technical Methodology Summary used to calculate greenhouse gas emissions for the Climate Action Strategy and other efforts can be found here: [www.miamidade.gov/global/economy/resilience/greenhouse-gas-inventories.page](http://www.miamidade.gov/global/economy/resilience/greenhouse-gas-inventories.page).

# 2022 CLIMATE ACTION STRATEGY APPROACHES AND ACTION ITEMS

**Community Recommendation** – action items proposed by members of the public during community engagement events held to assist with the development of the Climate Action Strategy (CAS).

## APPROACH 1:



## BENCHMARK, RETUNE AND RETROFIT EXISTING BUILDINGS

### BOLD ACTIONS

1. Adopt a Building Performance Ordinance to ensure benchmarking and retuning of large existing buildings community-wide.
2. Expand weatherization assistance through repairs and upgrades to improve energy efficiency, safety, and comfort in Low to Moderate Income (LMI) housing. - **Community Recommendation.**

Other actions

3. Create a Quality Assurance Verifier position to support the guidelines and applicability of Building Performance Ordinance.
4. Assess local rental housing and energy trends and create rental efficiency policies and programs. - **Community Recommendation.**
5. Offer monetary and/or non-monetary incentives to promote building retrofits, starting with LMI buildings.
6. Update Miami-Dade County Government's Electricity Master Plan.

## APPROACH 2:



## EXPAND ON-SITE AND OFF-SITE RENEWABLE ENERGY GENERATION

### BOLD ACTIONS

1. Install solar on as many County buildings as possible.
2. Support installation and financing of on-site solar for homes and businesses.

## Other actions

3. Complete the installation of solar on County buildings as identified in the Solar Feasibility Study Phase 2.
4. Establish the Solar Energy Loan Fund program and similar financial mechanisms in Miami-Dade County. - ***Community Recommendation.***
5. Require new County buildings to be solar-ready for the County to lead by example. - ***Community Recommendation.***
6. Cut soft costs for installing on-site solar energy. - ***Community Recommendation.***
7. Execute an agreement with the United States Department of Energy's National Renewable Energy Laboratory to pursue a mutually beneficial project to reduce greenhouse gas emissions.

**APPROACH 3:****BUILD ULTRA-LOW ENERGY BUILDINGS****BOLD ACTIONS**

1. All new County buildings will be Ultra-Low Energy by 2030.
2. Identify steps to transition to net-zero-ready code.

## Other actions

3. Plan for the first ULE or NZE County building.
4. Offer monetary and/or non-monetary incentives to promote the construction of ULE or NZE buildings.
5. Organize a green building fair and competition to showcase technologies and innovations to facilitate new ultra-low energy construction. - ***Community Recommendation.***
6. Assess embodied carbon in construction and create policies and programs to reduce it. - ***Community Recommendation.***



**APPROACH 4:**

## **REDUCE TRANSPORTATION-RELATED FUEL CONSUMPTION**

**BOLD ACTIONS**

1. Make walkability and safety a communitywide priority. - ***Community Recommendation.***
2. Complete 50 miles of protected bike lanes in downtown Miami. - ***Community Recommendation.***
3. Work to ensure geographically dispersed and equitable public access to EV chargers that are EnergyStar certified and, whenever possible, use renewable energy.
4. Establish County policies to prioritize and double the installation of roundabouts instead of traditional street intersections by 2030.
5. Build out SMART Plan corridors.
6. Implement the community-driven Better Bus Network.

Other actions

### **Actions to reduce vehicle and mobile equipment usage:**

7. Design an Alternative Workplace Solutions policy and program for Miami-Dade County to maintain and expand the number of employees who telecommute and explore methods to encourage other large employers to implement telecommuting. - ***Community Recommendation.***
8. Double the utilization of roundabouts instead of traditional street intersections.
9. Facilitate infill, compact, and mixed-use redevelopment with increased density. - ***Community Recommendation,*** especially along SMART Plan Corridors.
10. Build transit-oriented developments. - ***Community Recommendation.***
11. Make sure bus stops are positioned under trees or other means of shade to safeguard transit users from extreme heat. - ***Community Recommendation.***
12. Pilot a Mobility-as-a-Service (MaaS) program.
13. Implement a Countywide Mobility Rewards Program to incentivize the use of public transportation and integration among mobility providers. - ***Community Recommendation.***
14. Partner with Miami-Dade County Schools to analyze and propose adjustments to school schedules to minimize traffic when school is in session.
15. Expand effective low-carbon mobility options.

**Actions to expand effective low-carbon mobility options:**

16. Implement the Miami-Dade 2045 Bicycle/Pedestrian Master Plan.
17. Develop and implement a pedestrian prioritization plan.
18. Implement Complete Streets and Vision Zero pedestrian and cyclist safety programs.
19. Rapidly deploy premium public transit solutions along SMART plan corridors to increase ridership and mode shift from single occupancy vehicles.
20. Allow the use of excess solar power at Countywide bus shelters to power micro-mobility/ electric bicycle equipment. - ***Community Recommendation.***
21. Explore the use of all County-owned property for the deployment of DTPW first- and last-mile services, such as electric bicycle stations, protected bicycle parking, universal bicycle racks, on-demand and ridesharing pick-up/drop-off.

**Actions to electrify the County fleet and equipment:**

22. Complete a light fleet electrification analysis to guide the replacement of County-owned fossil-fuel vehicles with battery-electric vehicles (BEVs).
23. Modify procurement methodologies to account for lifecycle operational and maintenance cost savings of electric vehicles and equipment options.
24. Complete assessments of key County facilities to determine where to install EV charging infrastructure.
25. Find funding and modify facilities to install charging infrastructure, requiring charging infrastructure on County property to be EnergyStar certified and, wherever possible, use renewable energy.
26. Complete assessments of County equipment to determine which equipment types should be prioritized for electrification.
27. Construct new or retrofit existing County bus shelters so they are powered by solar unless there are impracticalities such as shading.
28. Deploy electric buses to serve disadvantaged communities as the priority to help redress historic inequity issues.

**Actions to accelerate community vehicle and equipment electrification:**

- 29. Enforce and expand ordinances and other measures that require public charging and require Energy Star-certified chargers on all County properties and any public projects for which the County provides funding, financing, or any financial support.
- 30. Assist existing multi-family residential, office, and commercial properties to retrofit EV charging.
- 31. Facilitate community education on the economic, social, and environmental benefits of vehicle and equipment electrification. - ***Community Recommendation.***
- 32. Establish local regulations or other policy measures to ensure that all autonomous vehicles operating in Miami-Dade County are electric.
- 33. Encourage the use of low or no-emissions landscaping and gardening equipment.
- 34. Use LED streetlights as EV charging stations for on-street parking.

**Actions to reduce emissions at PortMiami, airports & other commercial hubs:**

- 35. Implement PortMiami's visionary and transformational program to develop the nation's first end-to-end net zero carbon emission supply chain.
- 36. Set cumulative goals to reduce emissions at PortMiami and MIA facilities and develop plans with cruise lines and airlines to reduce emissions using best practices from the EPA National Port Strategy Assessment and Airports Council International's (ACI) Airport Carbon Accreditation program.
- 37. Educate and work with airport and seaport facility user groups/tenants on industry-best practices for reducing fuel consumption.
- 38. Install Visual Guidance Docking System (VGDS) at airports to reduce aircraft idling.
- 39. Implement a shore power program for PortMiami cruise operations to reduce engine use.
- 40. Support fuel reductions through other changes to fueling infrastructure, facilities, and operations such as: replacing older inefficient equipment and fleets, including vessels and aircraft; making operational improvements to reduce idling; switching to renewable, electric, or hydrogen fuels; improving routing and delivery efficiencies; prioritizing facility construction and modifications that increase water and energy efficiency and solar; and promoting related behavioral and educational efforts.



**APPROACH 5:****EXPAND AND PROTECT GREEN AND BLUE SPACES****BOLD ACTIONS**

1. Develop methodologies to assess, track, and regularly report on changes to the amount of acreage and functional quality per ecosystem type in Miami-Dade County, in order to determine successful habitat protection strategies and to more accurately calculate carbon sequestration and storage.
2. Develop a mitigation policy, based on the area impacted, to ensure that County-approved development results in a net increase in green infrastructure by the development's completion date.
3. Prioritize/require Florida Friendly Landscaping as the default County landscaping technique, including on County-owned or managed golf courses, to save water and reduce fertilizer/nutrient runoff. - ***Community Recommendation.***

**Additional actions that would expand and protect blue and green spaces in the future include work to:**

4. Assess the current percentage of urban tree canopy coverage and work with Million Trees Miami stakeholders to develop new policies, procedures, and timelines to achieve canopy coverage goals.
5. Ensure that all County facilities within the Urban Development Boundary (UDB) (per 2013 delineation) shall attain an average of at least 30% canopy coverage and all County facilities outside the UDB shall attain an average of at least 50% canopy coverage by 2030.
6. Prioritize County planting of trees in neighborhoods with the highest heat or highest utility burden. - ***Community Recommendation.***
7. Identify which County facilities have 20% or greater open space and determine which open space/bare ground areas at these facilities are not critical to facility function and can be used to plant trees.
8. Implement the Open Space Master Plan.

9. Restore Submerged Aquatic Vegetation (SAV) coverage in Biscayne Bay to historic baseline  
***Community Recommendation*** by:

- i. Determining the historic extent of SAV coverage.
- ii. Identifying the sources of pollutant loading and quantifying pollutant loads that affect SAV ecology.
- iii. Developing Best Management Practices (BMP's) to reduce pollutant loads to levels that promote SAV recovery.
- iv. Establish science-based, pollutant load reduction goals and interim targets to improve water quality and codify these limits in Chapter 24.
- v. Identifying targets for seagrass recovery.
- vi. Restoring SAV habitats whenever possible. - ***Community Recommendation.***
- vii. Protecting SAV from dredging-related silt. - ***Community Recommendation.***

10. Update regulations to better protect specimen trees.

11. Restore historically filled, County-owned coastal wetland areas whenever possible.

12. Prioritize the acquisition, by Miami-Dade County and its partners, of wetlands necessary for the implementation of the Comprehensive Everglades Restoration Plan, and within an Environmentally Endangered Lands acquisition footprint.

13. Improve implementation and enforcement of County environmental regulations to eliminate net loss of wetland area and function within Miami-Dade County. - ***Community Recommendation.***

14. Continue to invest in the preservation and restoration of fresh and saltwater wetlands and partner with Everglades restoration projects. - ***Community Recommendation.***

15. Enhance living shorelines in Biscayne Bay in accordance with existing rules and policies that protect outstanding Florida waters.

16. Improve County procedures to ensure appropriate vegetative material that is removed from County-owned lands, natural areas including conservation easements, and Environmentally Endangered Lands (EEL) is used as mulch and made available to the public free of charge.

17. Improve protection and management of Miami-Dade County properties that qualify as environmentally endangered, or as natural forest communities, by transferring appropriate areas/land to the Environmentally Endangered Lands Program (EEL).

18. Require landscape re-certification every five years for maintenance of landscaping within 300 feet of a canal feature that flows into Biscayne Bay.
19. Conduct feasibility studies for carbon sequestration that are consistent with existing resource protection requirements for shellfish, sponge, and macro-algaculture industries.
20. Develop and adopt a strategy to expand local forests in Miami-Dade County through inter-agency partnerships.
21. Explore using a portion of fishing license fees or license tag fees to generate funding for green and blue natural resources restoration projects. - **Community Recommendation.**

**APPROACH 6:****CONVERT WASTE TO ENERGY****BOLD ACTIONS**

1. Build a new, more efficient electricity-from-waste facility with onsite solar, designed to charge electric vehicles in the County fleet.
2. Upgrade cogeneration at wastewater treatment plants to produce 9.6 megawatts of electricity from biogas.
3. Send food waste to the new Fats, Oils, and Grease (FOG) digester to create additional biogas.
4. Optimize routes for waste collection and water system maintenance.
5. Upgrade landfill gas collection at the South Dade Landfill.
6. Release a yard waste study and support composting.

**APPROACH 7:****REDUCE WASTE AND WATER USE****BOLD ACTIONS**

1. Create a community-wide food rescue plan in collaboration with community-based organizations, businesses, and farmers.
2. Implement best practices to reduce and recycle construction and demolition waste, including requiring pre-construction waste management plans. - **Community Recommendation.**
3. Complete a Countywide solid waste characterization study and complete regular updates.
4. Require waste reduction plans for all large events. - **Community Recommendation.**



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To request materials in an accessible format, sign language interpreters, and or any accommodation to participate in any County sponsored program or meeting, please contact Alain Donderiz at 305-372-6779 or [alain.donderiz@miamidade.gov](mailto:alain.donderiz@miamidade.gov) five days in advance to initiate your request. TTY users may also call 711 (Florida Relay Service.)