SOUTHEAST
FLORIDA REGIONAL
CLIMATE
CHANGE
COMPACT

Southeast Florida Priority Climate Action Plan

March 2024

SOUTHEAST FLORIDA PRIORITY CLIMATE ACTION PLAN

Lead Organization: Miami-Dade County, on behalf of the Southeast Florida Regional Climate Change Compact, inclusive of Broward, Miami-Dade, Monroe, and Palm Beach Counties

March 1, 2024

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This project has been funded wholly or in part by the United States Environmental Protection Agency (EPA) under assistance agreement #02D57223 to Miami Dade County. The contents of this document do not necessarily reflect the views and policies of the EPA, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

Acknowledgements

The Southeast Florida Regional Climate Change Compact wishes to acknowledge the immense support of its partners, collaborators, and the consulting team who provided invaluable guidance, advisory and technical capacity integral to the development of this Priority Climate Action Plan (PCAP).

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ACRONYMS

AFOLU	Agriculture, Forestry, and Other Land Use
BEBR	Bureau of Economic and Business Research
CAFE	Corporate Average Fuel Economy
CCAP	Climate Change Action Plan
CEJST	Climate and Economic Justice Screening Tool
CPRG	Climate Pollution Reduction Grant
EIA	Energy Information Administration
EJScreen	Environmental Justice Screening and Mapping Tool
EPA	Environmental Protection Agency
EV	Electric Vehicle
EVCI	Electric Vehicle Charging Infrastructure
GHG	Greenhouse Gas
HDI	Human Development Index
LIDAC	Low-Income / Disadvantaged Communities
MSA	Metropolitan Statistical Area
MTCO2e	Metric tons of CO_2 equivalent
MW	Megawatts
NEI	National Emissions Inventory
PCAP	Priority Climate Action Plan
PV	Solar Photovoltaic
RAP	Resilience Action Plan
RCAP	Regional Climate Action Plan
The Compact	Southeast Florida Regional Climate Change Compact
VMT	Vehicle Miles Traveled

EXECUTIVE SUMMARY

The Southeast Florida Regional Climate Change Compact ("Compact"), on behalf of Broward, Miami-Dade, Monroe and Palm Beach counties, is leading the development of a regional greenhouse gas (GHG) reduction plan, covering the entire geographic extent of the four-county region, as well as the Miccosukee and Seminole Tribal Governments. The plan will be developed in two phases, with an initial phase complete in March of 2024 and a final, comprehensive plan complete in the Summer of 2025. The opportunity to develop a first-of-its-kind regionally comprehensive GHG reduction plan has been made possible through the Environmental Protection Agency's (EPA) Climate Pollution Reduction Grants (CPRG) program, funded by the Inflation Reduction Act.

Through the CPRG, each of the 67 most populous metropolitan areas in the country was eligible for a $1 million planning grant, inclusive of the Miami-Fort Lauderdale-Pompano Beach Metropolitan Statistical Area (MSA). Given the long-term and considerable partnership across the four Compact counties, the Compact's climate mitigation plan will cover the entire geographic scope of the Compact region, inclusive of Monroe County. The grant was officially awarded on August 4, 2023.

The planning work advanced under this grant will position all local and tribal governments and other eligible entities as defined by the EPA in the four-county region to be eligible to apply directly for discretionary awards ($4.6 billion in funding) from the EPA to implement the GHG reduction measures included within this PCAP. Miami-Dade County has served as the lead organization (grantee) on behalf of the Compact counties in managing and executing deliverables under this planning grant.

PCAP Elements

This PCAP is organized by the following elements/sections:

- Chapter 1: Introduction
- Chapter 2: Greenhouse Gas Emissions Inventory
- Chapter 3: Greenhouse Gas Emissions and Targets
- Chapter 4: Quantified GHG Reduction Measures
- Chapter 5: Low Income Disadvantaged Communities (LIDAC) Benefits Analysis
- Chapter 6: Next steps

1 INTRODUCTION

1.1 CPRG OVERVIEW

The CPRG, administered by the U.S. Environmental Protection Agency (EPA) program provides $5 billion in grants to states, local governments, tribes, and territories to develop and implement ambitious plans for reducing GHG emissions and other harmful air pollution. Authorized under Section 60114 of the Inflation Reduction Act, this two-phase program provides $250 million for noncompetitive planning grants and approximately $4.6 billion for competitive implementation grants.

Phase 1 of the CPRG program provides planning grants to design climate action plans that incorporate a variety of measures to reduce GHG emissions from across their economies in six key sectors (electricity generation, industry, transportation, buildings, agriculture/natural and working lands, and waste management). The following deliverables are required under the planning phase of the grant:

1) Priority Climate Action Plan (due March 1, 2024)
2) Comprehensive Climate Action Plan (due two years after planning grant award, or approximately mid-2025)
3) Status Report at the end of the 4-year grant period (approximately mid-2027)

This report provides the first deliverable under this grant – the Priority Climate Action Plan.

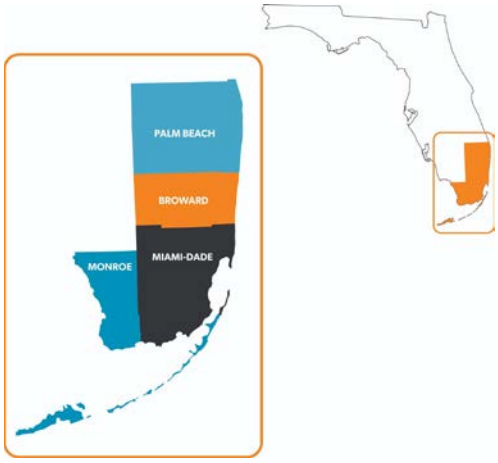
1.2 ABOUT THE SOUTHEAST FLORIDA REGIONAL CLIMATE CHANGE COMPACT

The Compact is a nearly fifteen-year partnership between Broward, Miami-Dade, Monroe, and Palm Beach counties to work collaboratively to reduce regional GHG emissions, implement adaptation strategies, and build climate resilience across the Southeast Florida region. The Compact is one of the nation's earliest leaders to conceive of and formalize a collaborative regional approach to address climate change, a model that has been replicated nationally and internationally.

Through the Compact, the four counties have more than a decade-long track record of regional collaboration and have built long-term trusting relationships and the governance structure to advance successful regional collaboration on climate mitigation and adaptation strategies, work products, and plans. In 2012, the Compact developed the first iteration of the Southeast Florida Regional Climate Action Plan (RCAP) and has consistently updated it every five years with input from experts and the community. The RCAP serves to align, guide, and support the acceleration of local and regional climate action toward a shared vision of a low-carbon, healthy, prosperous, more equitable and more resilient region. This

Priority Climate Action Plan will serve as the region's Greenhouse Gas Reduction Plan. It will work in conjunction with other regional plans, including the Regional Climate Action Plan, to address climate change-related issues facing the Southeast Florida Region.

1.3 SCOPE OF THE PCAP



This PCAP covers the entire geographic extent of the four-county Southeast Florida Region (Broward, Miami-Dade, Monroe, and Palm Beach counties), the 109 municipalities within this four-county region, as well as the Miccosukee and Seminole Tribal Governments jurisdictions. The region contains a population of nearly 6.2 million people.

The priority GHG reduction measures contained within this PCAP should be construed as broadly available to any entity within this geographic extent eligible for receiving funding under the EPA's CPRG program.

1.4 APPROACH TO DEVELOPING THE PCAP

This document was created with extensive input and guidance from implementing agencies within the region and the community. To guide the development of the PCAP, the region engaged an advisory committee composed of representatives from the following organizations.

- Broward, Monroe, Miami-Dade, and Palm Beach counties
- The cities of Fort Lauderdale, Miami, Key West, and West Palm Beach (most populous city within each County)
- Seminole Tribe of Florida
- Miccosukee Tribe of Florida
- Community-Based Organization, The CLEO Institute (representing the LIDAC community)
- Project Consultants

The advisory committee met bi-weekly during development of the PCAP to guide the identification of priority measures.

In addition, a survey was sent to all implementing agencies within the region to identify potential GHG reduction measures. This included the four counties, 109 municipalities, and two tribal governments. In

addition, a workshop was held with the implementing agencies to inform them of the process and encourage their participation. The process of identifying priority measures for inclusion in the PCAP is detailed in Chapter 4 of this report.

A key measure of the success of the Climate Pollution Reduction Grant planning phase was to incorporate input from affected stakeholders, particularly LIDACs and the general public across four counties – Palm Beach, Broward, Miami Dade, Monroe – in the Southeast Florida region. The major goals of these engagements included collaborating, transparency, providing access to information, and fostering discussions. These goals were achieved by conducting a community "needs/wants" survey to solicit feedback on LIDAC's challenges, community priorities, and considerations as they pertain to reduction measures prioritized, as well as workforce development to support mitigation objectives. Further, stakeholder engagement sessions with LIDACs were organized to ensure targeted and localized engagement. Other groups invited to complete the survey and participate in the stakeholder engagement sessions included nonprofit organizations (e.g., faith-based, community-based, social service), local government, academic institutions, and others. A full description of the LIDAC engagement effort is included in Chapter 5 of this report.

1.5 State of Florida Climate Policy Landscape

In the dynamic landscape of climate policy, while there has been an abundance of opportunity from the federal government, opportunities for organized expansion and investment in greenhouse gas reduction measures have faced notable limitations within the state of Florida.

At the federal level, initiatives such as the Department of Energy's SCEP Home Efficiency Rebates and Home Electrification and Appliance Rebates (IRA) strive for advancing residential energy efficiency and electrification, with a total allocation of $346,326,390 for Florida ($173,668,720 for the Home Efficiency Rebates Allocation and $172,657,670 for the Home Electrification and Appliance Rebates Allocation). Yet, the path to accessing these crucial federal funds has been limited. In 2023, although the State Legislature appropriated $5,000,000 for the Florida State Energy Office to implement these IRA programs, Governor DeSantis ultimately vetoed the appropriation, which foreclosed access to these federal funds. While there are signs of progress with Governor DeSantis' 2024 budget recommendation of $1,731,632 in nonrecurring funds from the Federal Grants Trust Fund to the Department of Commerce for the administration of home energy rebate programs, the journey towards securing and utilizing federal grants for greenhouse gas reduction measures remains arduous absent direct allocation or grants from the federal to the regional/local level.

Similarly, state-level programs like the Weatherization Assistance Program (WAP) also face funding uncertainties, with allocations fluctuating between $25,363,096 in FY 2023 and a proposed $3,472,840 for FY 2024-2025. This program provides grant funds to community action agencies, local governments, Indian tribes, and nonprofit agencies to provide weatherization services for low-income families across

Florida. The fluctuation in funding allocations and budget deliberations underscore the challenges in ensuring consistent support for these initiatives.

Other initiatives aimed at promoting renewable energy adoption, such as the EPA's Solar For All program (IRA), have encountered hurdles in Florida, where the state chose not to apply for the grant. Solar for All will award up to 60 grants to states, territories, Tribal governments, municipalities, and nonprofits to expand the number of low-income and disadvantaged communities primed for residential solar investment—enabling millions of low-income households to access affordable, resilient, and clean solar energy. While coalition efforts have been made by the Solar Energy Loan Fund (SELF), The Nature Conservancy, and the FL Solar United Neighbors (FL-SUN) to bridge gaps in leadership and application processes, the state's reluctance to fully embrace these opportunities represents a missed chance to catalyze sustainable development within the state.

Given limited opportunities for organized expansion and investment in greenhouse gas reduction strategies, coupled with the absence of a formal state GHG reduction policy and minimal energy efficiency requirements for providers as approved by the Public Service Commission, there is a crucial need for localized action.

As stakeholders continue to navigate the complex landscape of climate policy, the imperative to seize opportunities for expansion and investment in greenhouse gas reduction measures remains as pressing as ever.

1.6 Regional Climate Policy Landscape

Broward County:

Broward County has developed and adopted three iterations of the Broward County-wide Climate Change Action Plan (CCAP), in 2010, 2015, and 2020, with 100+ priority actions addressing climate mitigation and adaptation. A primary goal of the 2020 CCAP is to mitigate the effects of climate change by reducing GHG emissions by 2% per year, ultimately leading to a total 80% reduction by 2050. More recently, the Board of County Commissioners adopted a net zero commitment by 2050, with the goal of achieving a 50% reduction by 2030.

Primary focal areas in the CCAP for mitigation include transportation, the built environment, and energy resources, with 20 strategies specifically addressing transportation, including transit-oriented development, shore power at Port Everglades, electric fleets, electric vehicle infrastructure, transportation demand management strategies, and more.

Renewable Energy and Energy Efficiency. A primary strategy within the Energy Resources Sector is to "promote energy efficiency in the community, including improvements to low- and moderate-income households. Example efforts include collaborative efforts with the Solar United Neighbors and the Solar Energy Loan Fund programs and authorization of the Property Assessed Clean Energy program to finance renewable energy and energy efficiency improvements.

In 2008, the Broward County Board of County Commissioners (Board) passed Resolution 2008-822, establishing a community-wide GHG emissions target of 80% below the 2007 baseline by 2050 to reduce the risks of climate change, including sea level rise.

In 2014, the Broward County Community Energy Strategic Plan was released and set goals, established prioritized objectives, and recommended immediate and short-term actions for the Broward community to address climate change through energy initiatives.

In February 2014, the Board adopted Resolution 2014-054, establishing a 20% renewable energy goal and supporting the Broward County Renewable Energy Action Plan. This 20% goal was surpassed with the County offsetting its electricity consumption of 132 megawatts (MW) via the Florida Power & Light Solar Together Program. In addition, the County has advanced large-scale rooftop and solar parking canopies at more than a dozen county sites (nearly 4 megawatts of installed capacity).

In 2021, the Board adopted Resolution 2021-452, committing to a net-zero goal by 2050 and an estimated 50% reduction by 2030. This action set the stage for the County's current solicitation to develop a County-wide Net-Zero Plan.

Transportation, Fuel, and Electric Vehicles. In 2018, Broward County committed to a clean fleet goal by 2030, and through the fleet electrification program, there are plans to replace nearly 900 gas- and diesel-powered light-duty vehicles with Electric Vehicles (EV) by the end of the decade (the County is on track to meet 80% of this goal by 2030, and currently has 105 EVs as part of the light vehicle fleet). In 2017, the County committed to converting to an EV bus fleet by 2035.

The County has an aggressive EV infrastructure installation program and has installed 70 charging ports for fleet vehicles thus far. Plans are in place to install 867 charging ports through 2026. An employee EV charging program is in place, and the County is currently procuring services to aid development of a county-wide Electric Vehicle Charging Infrastructure (EVCI) Investment Strategy and a Net-Zero Plan.

Broward County's Port Everglades is in the process of re-evaluating the feasibility of shore power. The Port has been working with a consultant to complete a cruise ship shore power electrical master plan. This will allow cruise ships to plug into the local power grid and turn off their diesel generators while at berth. This will eliminate the need to burn between 10 and 20 tons of fuel per ship call.

Miami-Dade County:

In 2022, Miami-Dade County released a Climate Action Strategy, a community-wide strategy to cut GHG emissions, create jobs and improve health. This Strategy lays out a framework for the County government and the community to achieve a 50% reduction in GHG emissions by 2030 (from a 2019 baseline) and then progress forward to achieve net zero by 2050 by transforming how we use energy, how we get around,

and what we do with our waste. It outlines seven approaches grouped into three strategic areas: Energy & Buildings, Land Use & Transportation, and Water & Waste.

In 2020, the Miami-Dade County Board of County Commissioners adopted text amendments to the Land Use Element in the Comprehensive Development Master Plan to establish goals and strategies aimed at reducing county-wide GHG emissions, including maintaining an emission inventory, increasing the use of solar energy; and expanding the availability of EVCI. The adopted targets are outlined in Land Use Element Objective LU-10 of the Comprehensive Development Master Plan.

Renewable Energy and Energy Efficiency. With the establishment of the comprehensive Climate Action Strategy, targets have been aimed at mitigating environmental impact and fostering energy efficiency across community and county-owned buildings. These targets include a commitment to upgrade a staggering 1.3 billion square feet of community-wide buildings by 2026 and retune an additional 1.1 billion square feet by 2030. Additionally, the County aims to retrofit 167,500 homes by 2030, prioritizing low to moderate-income households to reduce energy costs by 28%.

To further promote energy conservation, Miami-Dade County has implemented stringent land use policies, such as CDMP LU-10D, which encourages adherence to recognized environmental standards like ENERGY STAR and US Green Building Council Leadership in Energy and Environmental Design (LEED) certification for builders, remodelers, homeowners, and developers. These policies extend to county-owned facilities and infrastructure through measures outlined in LU-10C, which advocates for the adoption of recognized commercial building standards and the Institute for Sustainable Infrastructure Envision standards.

In conjunction with these policies, the County has enacted resolutions and ordinances to ensure sustainable practices in public projects. County Administrative Order AO 11-3 mandates life cycle cost analysis for public projects. At the same time, Ordinance-19-17 requires the installation of electric vehicle supply equipment in a percentage of parking spaces for projects involving parking facilities. Resolutions R-1103-10 and R-54-18 dictate that new roofs and major renovations must meet US EPA Energy Star Cool Roof Rating Council certification. At the same time, R-303-17 requires the evaluation of solar hot water and photovoltaic feasibility for buildings or infrastructure projects that use over 1,000 gallons of hot water per day.

Another facet of the County's strategy to reduce GHG emissions involves the installation of solar energy systems on county buildings and surrounding land and water to produce 61,725 kW of solar energy by 2030. These installations are equivalent to powering 7,498 homes' electricity use for one year. In addition, the County's strategy supports the installation of 794,000 kW of solar energy by 2030 on commercial and residential buildings, equivalent to 104,014 homes' electricity use for one year.

Furthermore, the County aims to maximize participation in utility-scale renewable energy programs. This commitment is reinforced by Land Use Policy LU-10H, which sets a target for 30% of county-wide energy to be obtained from solar by 2030, ultimately striving for zero emissions from county-wide energy sources.

Transportation, Fuel, and Electric Vehicles. The County has set targets to revolutionize transportation, fuel, and electric vehicle infrastructure. By 2030, the plan aims to redirect 10% of transportation away from single-occupant vehicles, fostering a shift towards more sustainable alternatives. Moreover, a significant focus lies on electrifying the county fleet, with aspirations to electrify 80% of light vehicles and 50% of public transit buses by 2030. Concurrently, the strategy outlines plans to transition 30% of community-wide vehicles to electric power. Furthermore, the strategy addresses emissions from key transportation hubs, aiming to slash GHG emissions from Miami International Airport and PortMiami operations by 50% and 25% by 2030, respectively.

Within Miami-Dade County's Land Use Policies, LU-10J emphasizes the County's intention to expand the availability of EVCI. Resolution R-1034-18 sets goals for reducing county operations' gasoline and diesel fuel consumption by 2028. By 2035, the transit bus fleet is slated to incorporate at least 50% battery electric-powered buses.

In furtherance of these goals, Section 33-122.5 and 30-423 of the County Code, established by Ordinance 19-17, mandate off-street parking requirements for electric vehicles in new developments, excluding single-family, duplex, or townhouse properties. This legislation, known as the "EV-Ready" ordinance, incentivizes electric vehicle adoption and reduces carbon emissions. Additionally, Mayor Levine Cava's administrative memo issued in April 2021 directs departments to reduce emissions from the County's fleet vehicles swiftly. Departments must adhere to minimum fuel efficiency standards when purchasing sedans, trucks, vans, and SUVs. Furthermore, the memo outlines a comprehensive plan for transitioning the entire fleet to battery-electric vehicles by 2030.

Waste Reduction. Miami-Dade County has outlined plans to convert waste into energy and reduce overall waste and water use. By 2030, the strategy aims to generate 48 GWh/year of electricity through cogeneration at wastewater plants. Additionally, the plan targets converting 50% of non-recycled garbage into energy, further mitigating environmental impact. Complementing these efforts, the strategy seeks to achieve a 10% increase in recycling rates while cutting the contamination rates of non-recyclables in half. Furthermore, Miami-Dade set goals to reduce landfill waste per person by 50%, promote a more sustainable approach to waste management, and reduce water consumption per person by 30%.

Monroe County:

Monroe County's GreenKeys! The Sustainability Action Plan addresses vulnerabilities to sea level rise and climate change with 181 action items for mitigation and adaptation. The County has committed to a 40% GHG reduction by 2030 based on a 2012 baseline.

Transportation, Fuel, and Electric Vehicles. The County has applied for 30 fully electric transit vans from the Federal Transit Administration, including electric vehicle infrastructure and charging stations. A long-term plan is being implemented to build the country's first and only 100% zero-emission transit system.

This would mean the 11+ diesel buses currently operating in Monroe County would be replaced with fully electric buses.

Palm Beach County:

Palm Beach County has prioritized and completed climate resiliency and adaptation projects for over a decade. Some highlighted work includes, recently launching an electric vehicle charging equipment pilot. Requiring all PBC capital construction projects to consider resiliency and sustainability features. Building living shorelines. Conducting energy efficiency lighting retrofits throughout PBC facilities.

In December 2022, the Palm Beach County Board of County Commissioners adopted the Compact RCAP 3.0 and authorized the County Administrator to implement RCAP 3.0 where appropriate and practicable. The County continues to pursue cost-effective ways to reduce County GHG emissions, though it does not have a current GHG emissions reduction target.

Palm Beach County is developing a climate change vulnerability assessment and resilience action plan (RAP), which will be completed by August 2025. The RAP will include climate resilience adaptation and climate GHG mitigation options. The RAP will build upon existing County strategies, prioritizing local projects based on the vulnerability assessment results and include realistic implementation plans to better guide future county-wide resilience efforts. The RAP will provide County operations and County-wide community resilience targets, an implementation strategy to achieve the targets, and a public engagement program that ensures social equity in evaluating and implementing solutions. In developing the RAP, the County will assess the feasibility of net zero GHG emissions options. The RAP shall include GHG mitigation options that can assist the County in achieving net zero GHG emissions, including preliminary cost estimates and potential challenges to achieving such opportunities.

2 GREENHOUSE GAS EMISSIONS INVENTORY

2.1 METHODOLOGY

A full methodology is included in Appendix 1 and is briefly outlined here by sector:

Residential, Commercial, and Industrial Energy

Electricity and natural gas usage were provided by local utilities, with some exceptions. These exceptions are assumed to be small compared to total usage. Non-utility fuels used in buildings (propane, fuel oil/diesel) were scaled down from state-level data provided by the U.S. Energy Information Administration (EIA) by population for the residential and commercial sectors. Since it is expected that industrial non-utility fuel usage is small and unlikely to scale with population, industrial non-utility fuel was excluded here. EIA commercial gasoline usage is largely associated with lawn and garden equipment; since that usage is included under non-road transportation in this inventory, it was excluded here.

Transportation and Mobile Combustion

We used vehicle miles traveled data from Google's Environmental Insights Explorer tool, and vehicle fuel efficiency data from the Bureau of Transportation Statistics and Federal Highway Administration to estimate on-road fuel consumption.

We requested data on total aviation gas and jet fuel flowage from each of the class B, C, and D airports in the region, and received data from most of them, including all class B and C airports.

For all other transportation and mobile emissions, we used County level data from the EPA's National Emissions Inventory (NEI). The most recent data available is 2020, which is possibly anomalous due to the COVID pandemic. However, we decided that this was the best data available, and that the availability and ease of use of this data for this inventory, as well as future inventories, justified its use. We separated out emissions for rail operations and commercial marine operations, and lumped all other non-road emission types by fuel. As mentioned above, the U.S. EIA classifies emissions from lawn and garden equipment in the commercial sector, and the EPA's NEI classifies those emissions in the transportation sector. We have elected to include them in the transportation.

Solid Waste

The Florida Department of Environmental Protection provides County-level reports on solid waste characterization, amount incinerated, and amount landfilled. We used this data to estimate landfill emissions assuming a moderate moisture content (based on local rainfall amounts) and typical methane collection scenarios.

Wastewater

Emissions for the water and wastewater sector often include emissions associated with grid electricity usage. However, those emissions have been included in the commercial sector for this inventory due to a lack of available water and wastewater-specific data.

We estimated emissions from wastewater processing based on population, making reasonable assumptions about wastewater treatment types and using national defaults where appropriate. In certain cases, counties supplied County-specific information on wastewater processing methods and, in those cases, that information was used in the estimates.

Process and Fugitive Emissions

To include any other major sources of GHGs, including nitrogen trifluoride, sulfur hexafluoride, hydrofluoroalkanes, and perfluoroalkanes, we examined the EPA's FLIGHT system for any sources of GHGs not included elsewhere in the inventory (e.g., landfills).

The only two sources we found were both cement manufacturing facilities in Miami-Dade County. Reports for both of these facilities informed us that, due to a combined stack, both process and combustion emissions were included. Any combustion emissions should properly be included in the industrial sector, but since they cannot be separated from process emissions, we have included them here. Any utility-supplied natural gas combusted at these facilities will be double-counted with industrial sector utility-supplied natural gas, but we expect this overlap to be small.

Agriculture, Forestry, and Other Land Use (AFOLU)

Emissions associated with forestry and land use change were calculated by using ICLEI's Land Emissions and Removals Navigator tool. This tool uses data from the U.S. Geological Survey's National Land Coverage Database to estimate changes in land use. We set the tool to compare data from 2013 to 2019 (the most recent data included in the tool) to estimate land use change. Using a six-year instead of a three-year window means that less recent data is included in the estimate, but we think this is offset by the advantages of having a longer period to average over, smoothing out any anomalous years. We selected Gainesville, FL, as our analogue community, since this is the only Florida community available to use.

Emissions from livestock across the four-county region, as well as from crop cultivation in Broward and Monroe counties, are expected to be negligible and have been omitted from this inventory. For crop-related emissions in Miami-Dade and Palm Beach Counties, we used methodologies and emissions factors from the *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*, *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*, and the report *Carbon Assessment of the Everglades Agricultural Area*, prepared by Winrock International for the Everglades Foundation.

2.2 COMMUNITY-WIDE GHG EMISSIONS (2019)

Figure 2.2-1 shows community-wide GHG emissions by sector for the entire Southeast Florida Region, which is comprised of Broward, Miami-Dade, Monroe, and Palm Beach counties for 2019. The baseline year for purposes of this Priority Climate Action Plan is 2019. This reflects a year that is recent enough to be relevant, but also without any anomalies related to the COVID pandemic. Total emissions for the region were 69,993,641 metric tons of CO_2 equivalent (MTCO2e) in 2019. For 2019, our baseline year, the largest contributor was transportation (including on-road vehicles, airports, marine vessels, and other off-road vehicles), with 53% of emissions. The next largest contributors were commercial energy, including electricity, natural gas, and other fuels used by commercial buildings (16%), and residential energy, including electricity, natural gas, and other fuels used by residential buildings (15%). Solid waste incineration and landfilling, wastewater treatment processes, agriculture and land use, industrial energy, and industrial processes were responsible for the remaining 16% of emissions.

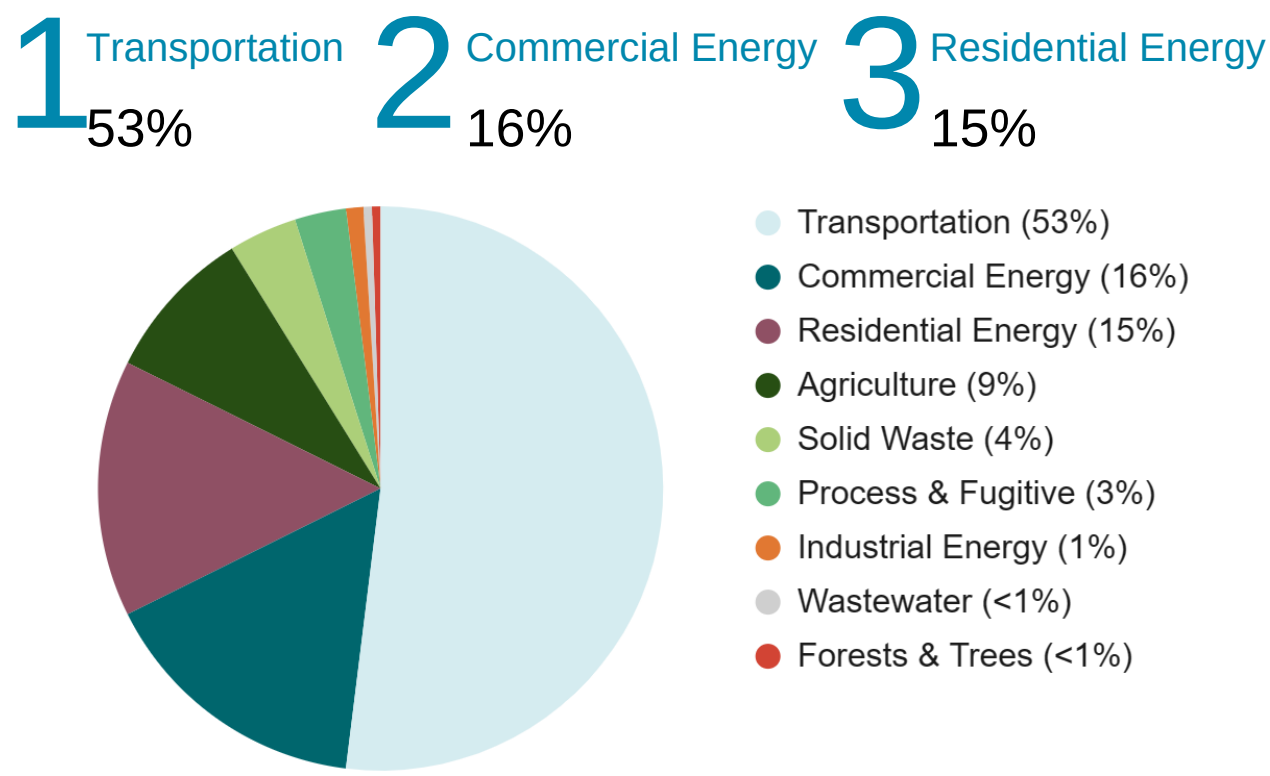


Figure 2.2-1: 2019 Emissions by Sector for the Southeast Florida Region

The total community-wide emissions for the 2019 inventory are shown in Figures 2.2-2 to 2.2-11.

Southeast Florida Region

Figure 2.2-2: Comparison of all four Community-Wide Emissions Inventories of 2019

Sector	County	2019 Emissions (Mt CO2e)
Residential Energy	Broward	2,463,155
	Miami-Dade	4,544,614
	Monroe	242,939
	Palm Beach	2,890,656
Residential Energy Total		**10,141,364**
Commercial Energy	Broward	2,964,940
	Miami-Dade	5,205,852
	Monroe	147,433
	Palm Beach	2,230,586
Commercial Energy Total		**10,548,811**
Industrial Energy	Broward	101,930
	Miami-Dade	457,843
	Monroe	49,474
	Palm Beach	73,741
Industrial Energy Total		**682,988**
Transportation & Mobile Sources	Broward	10,774,014
	Miami-Dade	18,538,466
	Monroe	793,720
	Palm Beach	7,266,023
Transportation & Mobile Sources Total		**37,372,223**

Solid Waste	Broward	803,234
	Miami-Dade	1,195,178
	Monroe	54,517
	Palm Beach	627,864
Solid Waste Total		**2,680,775**
Water & Wastewater	Broward	7,055
	Miami-Dade	9,887
	Monroe	343
	Palm Beach	5,366
Water & Wastewater Total		**22,651**
Process & Fugitive	Broward	N/A
	Miami-Dade	2,142,639
	Monroe	N/A
	Palm Beach	N/A
Process & Fugitive Total		**2,142,639**
Agriculture	Broward	N/A
	Miami-Dade	22,208
	Monroe	N/A
	Palm Beach	6,046,003
Agriculture Total		**6,068,211**
Forests & Trees	Broward	59,276
	Miami-Dade	59,276
	Monroe	18,580

	Palm Beach	99,404
Forests & Trees Total		**236,536**
Total Gross Emissions		**69,993,641**

Figure 2.2-3 shows the distribution of community-wide emissions by sector. Transportation is the largest contributor, followed by commercial and residential energy.

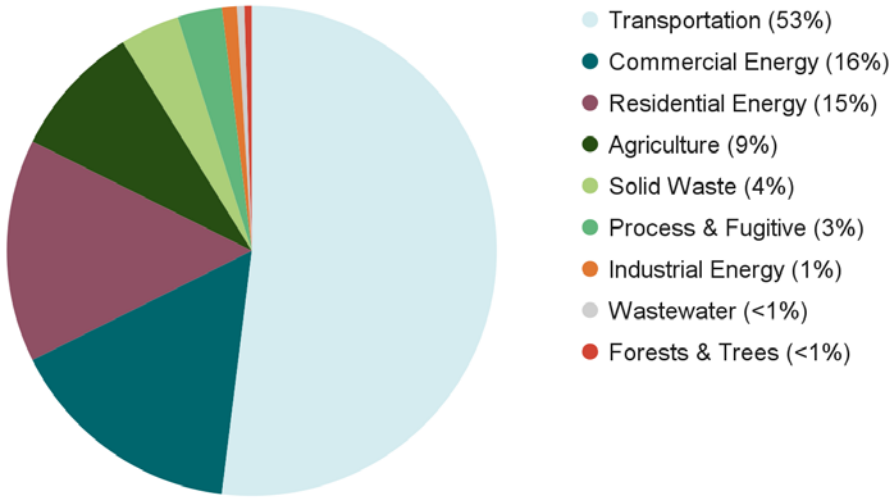


Figure 2.2-3: Emissions by Sector Among All Community-Wide Inventories in 2019

Broward County

Table 2.2-4: 2019 Community-Wide Emissions Inventory for Broward County

Sector	Fuel or Source	2019 Usage	Usage Unit	2019 Emissions (Mt CO2e)
Residential Energy	Electricity	7,842,615	MWh	2,377,718
	Natural Gas	9,160,423	Therms	48,721
	Distillate Fuel Oil No. 2	9,216	MMBtu	686
	Propane	580,581	MMBtu	36,030

Residential Energy Total				**2,463,155**
Commercial Energy	Electricity	8,380,360	MWh	2,540,751
	Natural Gas	59,089,843	Therms	314,278
	Propane	595,274	MMBtu	36,942
	Distillate Fuel Oil No. 2	980,024	MMBtu	72,969
Commercial Energy Total				**2,964,940**
Industrial Energy	Electricity	336,202	MWh	101,930
Industrial Energy Total				**101,930**
Transportation & Mobile Sources	On Road Gasoline	10,847,709,855	VMT	4,529,797
	On-Road Diesel	1,123,475,368	VMT	1,655,286
	Off-Road Diesel	8,396,578	MMBtu	621,320
	Off-Road CNG	128,228	MMBtu	8,530
	Off-Road Gasoline	4,483,424	MMBtu	321,375
	Off-Road LPG	728,852	MMBtu	44,912
	Rail	157,703	MMBtu	11,765
	Commercial Marine			163,932
	Jet Fuel	348299178	Gallons	3,407,299
	Avgas	1174983	Gallons	9,798
Transportation & Mobile Sources Total				**10,774,014**

Solid Waste	Waste Sent to Landfill	2,134,756	Tons	608,905
	Waste Sent to Incinerator	560,655	Tons	194,329
Solid Waste Total				**803,234**
Water & Wastewater	Combusted digester gas			42
	Flared digester gas			163
	Process N2O			4,466
	Effluent N2O			2,384
Water & Wastewater Total				**7,055**
Trees & Forests	Trees & Forests			16,976
	Trees Outside of Forests			42,276
Trees & Forests Total				**59,276**
Total Gross Emissions				**17173,604**

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

Figure 2.2-5 shows the distribution of community-wide emissions by sector for Broward County. Transportation is the largest contributor, followed by commercial and residential energy.

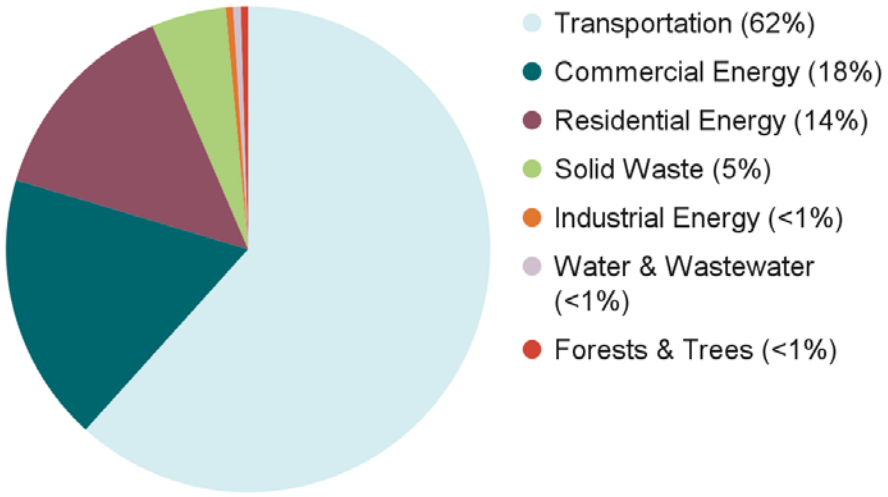


Figure 2.2-5: 2019 Community-Wide Emissions by Sector for Broward County

Miami-Dade County

Table 2.2-6: 2019 Community-Wide Emissions Inventory for Miami-Dade County

Sector	Fuel or Source	2019 Usage	Usage Unit	2019 Emissions (Mt CO2e)
Residential Energy	Electricity	14,523,149	MWh	4,403,117
	Natural Gas	16,929,371	Therms	90,041
	Distillate Fuel Oil No. 2	12,915	MMBtu	962
	Propane	813,639	MMBtu	50,494
Residential Energy Total				**4,544,614**
Commercial Energy	Electricity	15,322,049	MWh	4,645,327
	Natural Gas	76,092,351	Therms	404,709
	Propane	843,895	MMBtu	52,371

	Distillate Fuel Oil No. 2	1,389,339	MMBtu	103,445
Commercial Energy Total				**5,205,852**
Industrial Energy	Electricity	871,263	MWh	264,149
	Natural Gas	36,494,778	Therms	193,694
Industrial Energy Total				**457,843**
Transportation & Mobile Sources	On Road Gasoline	14,363,401,115	VMT	5,997,882
	On-Road Diesel	1,487,588,401	VMT	2,191,756
	Off-Road Diesel	11,196,299	MMBtu	828,505
	Off-Road CNG	220,351	MMBtu	14,784
	Off-Road Gasoline	5,579,400	MMBtu	399,854
	Off-Road LPG	1,076,998	MMBtu	66,377
	Rail	109,271	MMBtu	8,152
	Commercial Marine	4,702,587	MMBtu	330,441
	Jet Fuel	889,399,912	Gallons	8,700,715
Transportation & Mobile Sources Total				**18,538,466**
Solid Waste	Waste Sent to Landfill	3,048,221	Tons	1,195,178
	Waste Sent to Incinerator	481,611	Tons	166,931
Solid Waste Total				**780,172**
Water & Wastewater	Combusted digester gas			59

	Flared digester gas			228
	Process N2O			6,259
	Effluent N2O			3,341
Water & Wastewater Total				**9,887**
Process & Fugitive	Process and Stationary Combustion			709,545
	Complex Process and Stationary Combustion			1,433,094
Process & Fugitive Total				**2,142,639**
Agriculture	Nitrogen Fertilizer	55,206	Acres	20,935
	Legume Nitrification	7,555	Acres	1,273
Agriculture Total				**22,208**
Trees & Forests	Trees & Forests			94,015
	Trees Outside of Forests			62,705
Trees & Forests Total				**156,720**
Total Gross Emissions				**32,273,407**

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

Figure 2.2-7 shows the distribution of community-wide emissions by sector for Miami-Dade County. Transportation is the largest contributor, followed by commercial and residential energy.

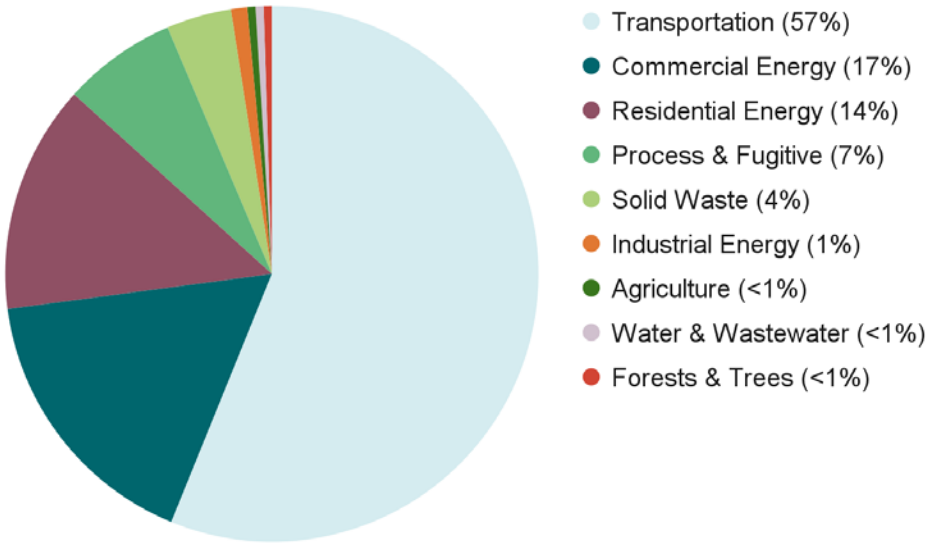


Figure 2.2-7: 2019 Community-Wide Emissions by Sector for Miami-Dade County

Monroe County

Table 2.2-8: 2019 Community-Wide Emissions Inventory for Monroe County

Sector	Fuel or Source	2019 Usage	Usage Unit	2019 Emissions (Mt CO2e)
Residential Energy	Electricity	796,537	MWh	241,494
	Distillate Fuel Oil No. 2	363	MMBtu	27
	Propane	22,846	MMBtu	1,418
Residential Energy Total				**242,939**
Commercial Energy	Electricity	465,224	MWh	141,046
	Propane	34,592	MMBtu	2,147
	Distillate Fuel Oil No. 2	56,950	MMBtu	4,240
Commercial Energy Total				**147,433**

Industrial Energy	Electricity	163,185	MWh	49,474
Industrial Energy Total				**49,474**
Transportation & Mobile Sources	On Road Gasoline	764,995,737	VMT	319,448
	On-Road Diesel	79,229,061	VMT	116,733
	Off-Road Diesel	1,255,808	MMBtu	92,956
	Off-Road CNG	2,894	MMBtu	197
	Off-Road Gasoline	3,088,739	MMBtu	222,207
	Off-Road LPG	11,604	MMBtu	716
	Commercial Marine	439,600	MMBtu	30,890
	Jet Fuel	959,512	Gallons	9,387
	Avgas	142,178	Gallons	1,186
Transportation & Mobile Sources Total				**793,719**
Solid Waste Solid waste	Waste Sent to Landfill	116,364	Tons	28,266
	Waste Sent to Incinerator	75,853	Tons	26,291
Solid Waste Total				**54,517**
Water & Wastewater	Process N2O			80
	Effluent N2O			263
Water & Wastewater Total				**343**
Forest & Trees	Forests & Trees			18,580

Forest & Trees Total	**18,580**
Total Gross Emissions	**1,307,005**

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

Figure 2.2-9 shows the distribution of community-wide emissions by sector for Monroe County. Transportation is the largest contributor, followed by residential and commercial energy.

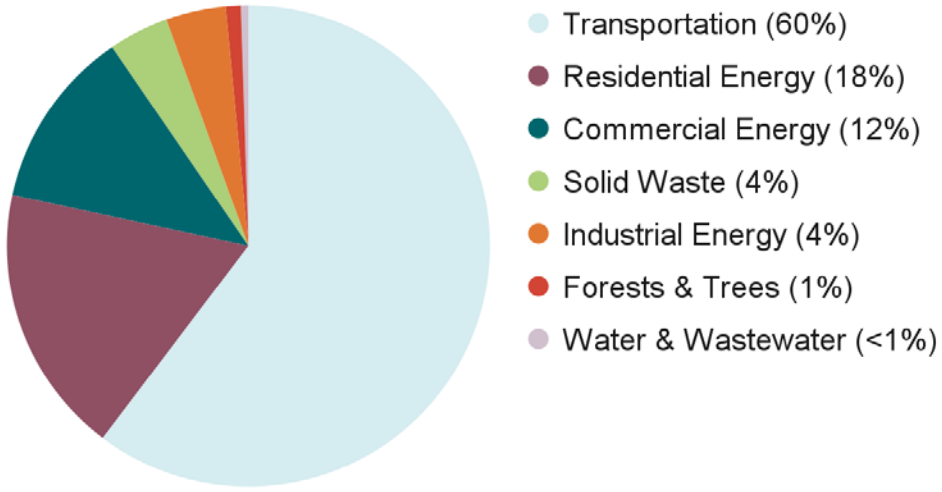


Figure 2.2-9: 2019 Community-Wide Emissions by Sector for Monroe County

Palm Beach County

Table 2.2-10: 2019 Community-Wide Emissions Inventory for Palm Beach County

Sector	Fuel or Source	2019 Usage	Usage Unit	2019 Emissions (Mt CO2e)
Residential Energy	Electricity	9,363,201	MWh	2,838,728
	Natural Gas	4,512,799	Therms	24,002
	Propane	441,576	MMBtu	27,404
	Distillate Fuel Oil No. 2	7,009	MMBtu	522

Residential Energy Total				**2,890,656**
Commercial Energy	Electricity	6,974,332	MWh	2,114,473
	Natural Gas	6,374,818	Therms	33,905
	Propane	445,235	MMBtu	27,631
	Distillate Fuel Oil No. 2	733,009	MMBtu	54,577
Commercial Energy Total				**2,230,586**
Industrial Energy	Electricity	243,225	MWh	73,741
Industrial Energy Total				**73,741**
Transportation & Mobile Sources	On Road Gasoline	9,825,802,489	VMT	4,103,068
	On-Road Diesel	1,017,638,489	VMT	1,499,350
	Off-Road Diesel	7,237,476	MMBtu	535,560
	Off-Road CNG	67,064	MMBtu	4,442
	Off-Road Gasoline	5,381,407	MMBtu	386,349
	Off-Road LPG	397,570	MMBtu	24,498
	Rail	260,658	MMBtu	19,444
	Commercial Marine	949,442	MMBtu	66,715
	Jet Fuel	63,932,886	Gallons	625,435
	Avgas	139,311	Gallons	1,162
Transportation & Mobile Sources Total				**7,266,023**

Solid Waste	Waste Sent to Landfill	1,218,865	Tons	486,214
	Waste Sent to Incinerator	408,620	Tons	141,632
Solid Waste Total				**606,423**
Water & Wastewater	Combusted digester gas			32
	Flared digester gas			124
	Process N2O			3,397
	Effluent N2O			1,813
Water & Wastewater Total				**5,366**
Agriculture	Soil Oxidation	420,000	Acres	5,945,000
	Methane from Rice	25,000	Acres	15,200
	Field Burning	280,000	Acres	84,681
	Legume Nitrification	6,667	Acres	1,122
Agriculture Total				**6,046,003**
Forests & Trees	Trees & Forests			46,152
	Trees Outside of Forests			53,252
Forests & Trees Total				**99,404**
Total Gross Emissions				**19,239,625**

*Blank cells are a result of variability in the format of available data by sector and fuel or source type.

Figure 2.2-11 shows the distribution of community-wide emissions by sector for Palm Beach County. Transportation is the largest contributor, followed by agriculture and residential energy.

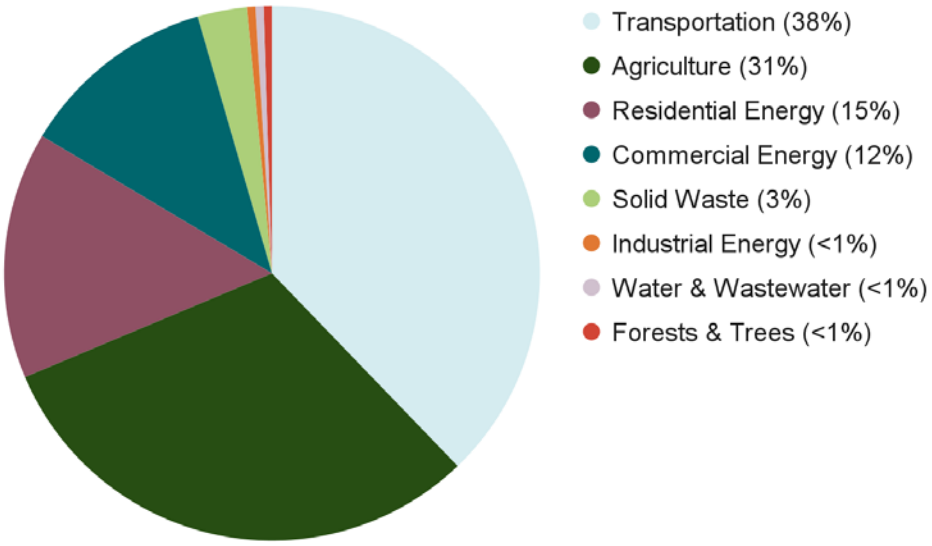


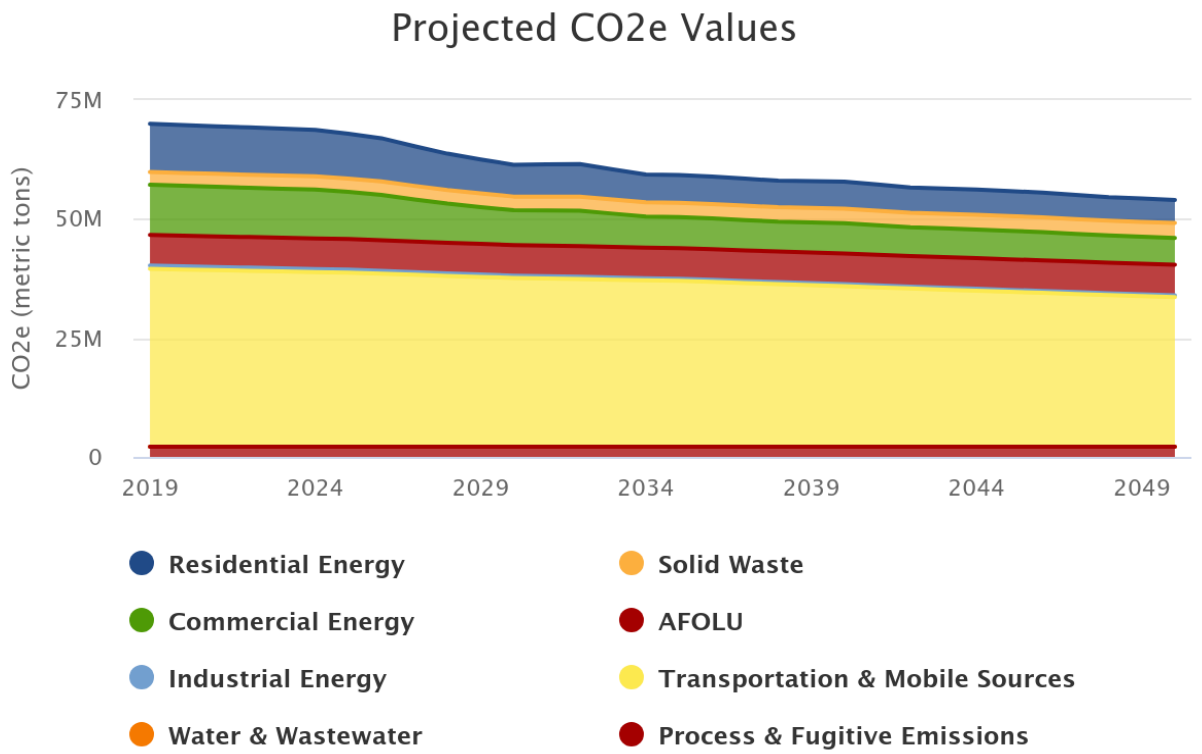
Figure 2.2-11: 2019 Community-Wide Emissions by Sector for Palm Beach County

3 GREENHOUSE GAS EMISSIONS PROJECTIONS

3.1 BUSINESS-AS-USUAL EMISSIONS PROJECTIONS

Business-as-usual emissions projections for the region are presented in Figure 3.1-1. This projection is based on the 2019 GHG inventory as a baseline, and takes into account projected federal Corporate Average Fuel Economy (CAFE) standards for vehicle efficiency, regional population growth based on the January 2024 Bureau of Economic and Business Research (BEBR) Projections of Florida Population by County, 2025-2050, with Estimates for 2023, and NREL's 2023 Standard Scenario, mid-case, current policies projections for grid electricity emissions factors. Consumption of residential and commercial power is assumed to increase with population, but industrial power consumption was held flat to account for the fact that this is unlikely to scale with population growth. All transportation sectors are assumed to scale with population, and CAFE standards are applied to all types of transportation; although these are likely to be inexact estimates for many transportation types, it is likely that all transportation types will grow in use moving forward, and also that all transportation types will tend to get more efficient. Solid waste and wastewater emissions are assumed to simply grow with increasing population. AFOLU and process and fugitive emissions are assumed to stay flat, in the absence of any other information.

Figure 3.1-1: Business-as-usual GHG Emissions Projections



Under these assumptions, emissions are expected to drop from 70,015,901 MTCO2e in 2019 to 61,404,597 MTCO2e in 2030 (a 12.3% decrease) and 54,022,085 MTCO2e in 2050 (a 22.8% decrease).

3.2 Science Based GHG Reduction Targets

The IPCC recommends a global emissions reduction of 50% by 2030. ICLEI determines a jurisdiction's "fair share" by calculating a science-based GHG reduction target for each County, and for the region as a whole. These targets use the 2019 GHG inventory, BEBR population projections, and the Human Development Index (HDI), and apply a calculation methodology from the World Wildlife Fund's One Planet City Challenge. This methodology takes the IPCC 50% global reduction goal and adjusts it based on the community's HDI, to produce a per-capita carbon emission target. The methodology then multiplies that per-capita amount by the projected future population to produce an absolute emissions reduction target. These targets are given in Figure 3.2-2.

Table 3.2-2: 2030 per-capita and absolute emissions reduction targets for each County, from a 2019 baseline

County	Per-capita reduction (%)	Absolute reduction (%)	Absolute reduction (MTCO2e)
Broward	62.8	59.7	10,252,642
Miami-Dade	62.8	59.7	19,267,224
Monroe	62.8	57.3	784,913
Palm Beach	62.8	58.3	11,216,700
All	**62.8**	**59.3**	**41,521,480**

4 GREENHOUSE GAS REDUCTION MEASURES

4.1 METHODOLOGY TO IDENTIFY PRIORITY GHG REDUCTION MEASURES

A combination of top-down and bottom-up approaches were used to identify the region's priority measures, as detailed in Figure 4.1-1 below.

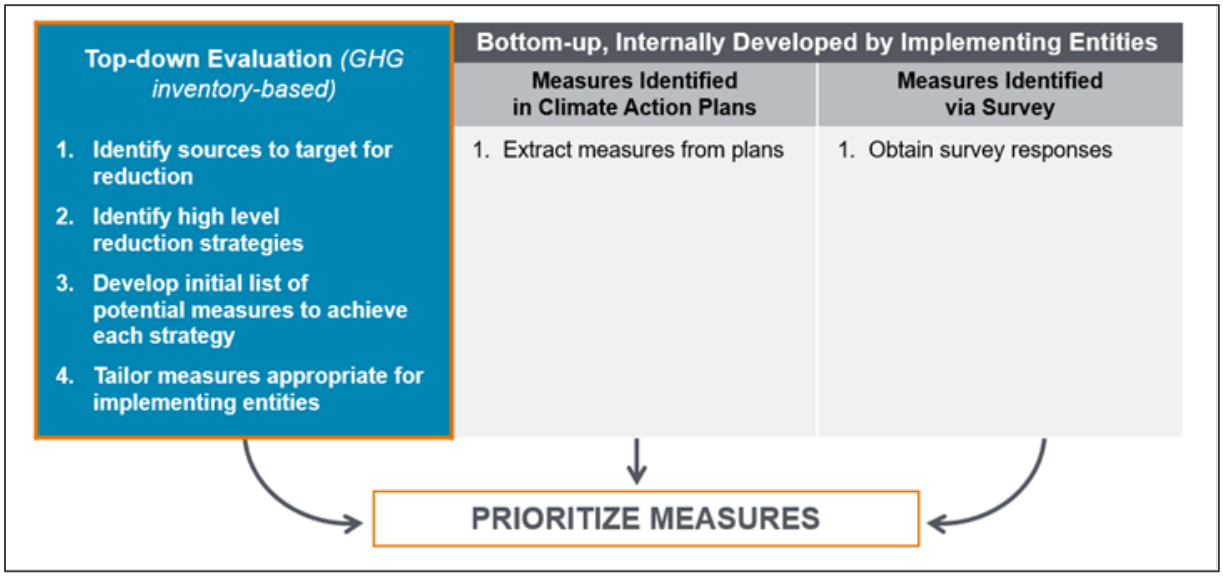


Figure 4.1-1: Diagram depicting strategy employed to identify priority GHG reduction measures.

TOP-DOWN EVALUATION

The top-down approach focused on the top three regional GHG emissions sectors responsible for 75% of the emission: 1) Transportation and mobile sources, 2) residential energy, and 3) commercial energy.

BOTTOM-UP EVALUATION

The intent of the bottom-up evaluation was to ensure the integration of local priorities into the PCAP. The approach included outreach, engagement, and a review of local climate action plans.

Implementing Agencies Outreach and Engagement

The implementing agencies in the Southeast Florida Region were engaged through – 1) Bi-weekly CPRG Advisory meetings with members from Palm Beach, Broward, Miami-Dade, and Monroe Counties, Cities of West Palm Beach, Fort Lauderdale, Miami, Key West, Seminole and Miccosukee tribes; 2) Implementing Agencies survey open from December 6, 2023 to January 5, 2024; 3) One-on-one meetings with each of the four County Office of Resilience officers and City departments, Seminole and Miccosukee tribes. The

information collected during this interaction from the implementing agencies served as input into the GHG reduction measures identified for the region.

Local Sustainability and Climate Action Plans

The measures identified in the Regional Climate Action Plan (RCAP) per economic sector developed by the Southeast Florida Climate Compact with the regional partners were also used to identify the reduction measures.

4.2 PRIORITY GHG REDUCTION MEASURES

The tables below note the identified measures, geographic scope, authority to implement, implementation schedule and milestones, metrics for tracking progress, and the GHG reduction potential. Priority GHG reduction measures identified were based on the top three GHG emission sectors and focused on measures that achieve significant GHG reductions while considering other relevant planning goals (e.g., benefits to LIDACs, air pollution benefits, and other co-benefits). These measures are identified as 'priority measures' to pursue funding through CPRG implementation grants and are not exhaustive of the region's priorities. The priority measures also include those identified by the two tribes in the region, Seminole and Miccosukee.

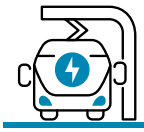
The priority GHG emission measures are quantified based on the corresponding outputs those actions could reasonably be expected to produce. For each of the measures described in the tables below, the activity is assumed to ramp or curve to the target year (e.g., 2030 or 2050) from previous years. The cumulative GHG reduction is the sum of the individual years. The detailed projects and assumptions that support the GHG reduction potential are outlined in Appendix 2. The detailed projects were identified through outreach to the implementing agencies and provide a representative sample of projects that could be implemented through 2030. However, they should not be construed as an exhaustive list of projects that could be implemented under an identified measure.

4.2.1 TRANSPORTATION

The region's counties, cities, ports, and transit agencies are committed to reducing GHG emissions and investing in a cleaner, multimodal transportation system.

In addition to GHG emissions reduction, many projects in the transportation sector have the added benefits of reducing emissions of harmful air pollutants, reducing noise, improving public health, and providing access to jobs and services.

Transportation agencies in the region provided information about planned projects from their local planning documents, including sustainability programs, long-range transportation plans, transit development plans, and port master plans. The prioritized measures within the transportation sector are detailed below.



MEASURE #1

AGENCY FLEET DECARBONIZATION

Overview	Measure #1 addresses the decarbonization of agency fleets by transitioning vehicles currently powered by fossil fuels to lower carbon options (electricity or compressed natural gas). The vehicles planned for transition include passenger vehicles, work trucks, refuse trucks, and buses. The reduction of vehicle exhaust from fossil fuels will reduce emissions of GHGs throughout the region while reducing exposure to harmful air pollutants in vulnerable populations near residences, schools, and hospitals.	
Description	**T-01**. Replace gasoline and diesel vehicles (passenger vehicles, work trucks, buses, refuse trucks, maintenance equipment) with lower carbon options (electric, CNG, hydrogen) and install required charging infrastructure. **T-02**. Install agency-owned charging infrastructure/ fleet transition support.	
Location	Southeast Florida Region	
Implementing Agencies and Implementing Authority:	Miami-Dade, Palm Beach, Broward, and Monroe counties, and their municipalities, the Miccosukee Tribe of Indians of Florida, and the Seminole Tribe of Florida have the authority to implement the measure on their properties under state law and tribal sovereignty established by the U.S. Constitution.	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 Transportation BAU Baseline:**	35,456,004
	Year 2030 Reduction vs BAU:	5,177

MEASURE #1

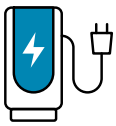
AGENCY FLEET DECARBONIZATION

Year 2050 Reduction vs BAU:	3,600
Implementation Schedule and Milestones	» **Through 2030**
Metrics for Tracking Progress	» Number of vehicles replaced » Annual mileage » Passenger vehicle emission factor – gasoline/diesel » Passenger vehicle emission factor – electric » Number of fleet charging ports

MEASURE #2

PUBLIC EV CHARGING INFRASTRUCTURE

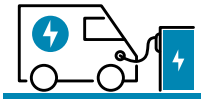
Overview	Measure #2 provides publicly accessible charging stations to promote the transition of personal gasoline-powered vehicles to electric options. Emissions were estimated by predicting the level of utilization of level 2 and level 3 chargers while considering the upstream GHG emissions from the electricity consumption required to charge vehicles.
Description	T-03. Install publicly available L2 and DCFC electric vehicle charging stations throughout the region.
Location	Southeast Florida Region
Implementing Agencies and Implementing Authority	Miami-Dade, Palm Beach, Broward, and Monroe counties, and their municipalities, the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida have the authority to implement programs that provide for public electric vehicle charging stations under state law, local authority, and tribal sovereignty established by the U.S. Constitution. Specifically, s. 366.94, Florida Statutes, specifies that the provision of electric vehicle charging to the public by a nonutility is not the retail sale of electricity and is, therefore, not subject to the statutory provisions regulating public utilities.
Potential GHG ($MTCO_2$) reduction from	**2030 Transportation BAU Baseline:** 35,456,004



MEASURE #2

PUBLIC EV CHARGING INFRASTRUCTURE

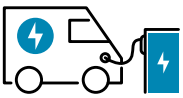
business-as-usual (BAU) projection	**Year 2030 Reduction vs BAU:**	18,809
	Year 2050 Reduction vs BAU:	12,579
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Number of public charging ports » Charging station utilization » Increase in EV registrations » Vehicle operation air pollutant emission factors	



MEASURE #3

EFFICIENT PORT OPERATIONS

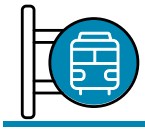
Overview	Measure #3 includes multiple programs the region's ports can implement to reduce diesel consumption. Port Miami and Port Everglades have already begun the implementation of shore power to eliminate air emissions from cruise ships at berth by providing the electricity needed to power onboard operations. The ports also plan to transition cargo handling equipment to lower emission options and implement technology that will reduce the idling of diesel trucks by providing for more efficient truck movement at gates and loading areas.	
Description	T-04. Encourage efficient energy use for port operations, including the use of lower carbon fuels and reduced idling of diesel trucks.	
Location	Miami-Dade, Broward County	
Implementing Agencies and Implementing Authority	Miami-Dade and Broward counties have the authority to implement with their properties and rights-of-way, and under state law and tribal sovereignty established by the U.S. Constitution.	
Potential GHG ($MTCO_2$) reduction from business-as-	**2030 Transportation BAU Baseline:**	35,456,004



MEASURE #3

EFFICIENT PORT OPERATIONS

usual (BAU) projection	**Year 2030 Reduction vs. BAU:**	1,702
	Year 2050 Reduction vs. BAU:	1,184
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Number of terminals transitioned and associated vessel calls » Average hours at berth » Reduction in diesel fuel usage by cruise ships at port » Reduction in idling time for diesel trucks » Efficiency of cargo-handling equipment	

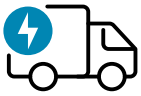


MEASURE #4

REDUCE ROADWAY VEHICLE MILES TRAVELED

Overview	Measure #4 is projected to reduce vehicle miles traveled (VMT) by providing alternatives to driving alone by car. Many municipalities have complete street initiatives that enable safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities. Local transit agencies are planning for expanded service, including new large-scale fixed-route and on-demand services.	
Description	**T-05**. Increase Transit Ridership. Encourage mode shift from driving alone to transit by providing new service, more frequent service, and new or improved station amenities. **T-06**. Active Transportation, Complete Street Programs. Encourage mode shift from driving alone to transit, walking, and biking by providing new shared-use paths, sidewalks, and connections to transit corridors with the tree canopy.	
Location	Southeast Florida Region	
Implementing Agencies and Implementing Authority	Miami-Dade, Palm Beach, Broward, and Monroe counties, and their municipalities, the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida have the authority to implement with their properties and rights-of-way, and under state law and tribal sovereignty established by the U.S. Constitution.	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 Transportation BAU Baseline:**	35,456,004
	Year 2030 Reduction vs BAU:	17,271
	Year 2050 Reduction vs BAU:	6,005
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Increase Transit Ridership 1. New Weekday Boardings 2. Reduction in Vehicle Miles Traveled » Complete Streets Programs 1. Reduction in Vehicle Miles Traveled	

4.2.2 TRANSPORTATION. TRIBE SPECIFIC MEASURES



MEASURE #5

DECARBONIZED FOOD DELIVERY SYSTEM

Overview	Measure #5 is projected to decarbonize the food delivery systems currently used by the members of the Seminole Tribe.	
Description	**TT-01.** Zero emissions delivery vehicle (truck) for grocery or food pantry for inland tribal food deserts, specifically Big Cypress and Brighton. **TT-02.** Zero emissions mobile trailer slaughterhouse and a mobile meat processing station.	
Location	The Seminole Tribe of Florida	
Implementing Agencies and Implementing Authority	The Seminole Tribe of Florida has the authority to implement the measure under tribal sovereignty established by the U.S. Constitution.	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 Transportation BAU Baseline:**	35,456,004
	Year 2030 Reduction vs BAU:	4
	Year 2050 Reduction vs BAU:	3
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Annual gasoline/diesel usage reduced	

4.2.3 BUILDINGS (RESIDENTIAL ENERGY)

The counties and cities in the Southeast Florida Region are leveraging existing residential programs that reduce GHG emissions through building improvements, which reduce the property's energy load and demand, and technology that runs more efficiently.

> *In addition to reducing GHG emissions, there are co-benefits to the users, such as savings on utility bills, property maintenance, and enhancements, and improving indoor environmental quality through enhancing thermal comfort and sound attenuation. These co-benefits were also highlighted as priorities for low-income communities that would benefit from access to these types of interventions.*

The prioritized measures within the Residential Energy sector are detailed below.

MEASURE #6

RESIDENTIAL ENERGY EFFICIENCY

Overview	The counties and cities in the Southeast Florida Region are leveraging existing residential programs that reduce GHG emissions through building improvements, which reduce the property's energy load and demand, and technology that runs more efficiently. Residential measures R-01, R-03, R-06, R-07, and R-09 address decarbonization through the implementation of newer technology for heating and cooling systems, domestic hot water heating, smart appliances, and controls for more efficient energy performance in the residential context. Residential measures R-04 and R-05 assess and recommend improvements for the building enclosure, windows, doors, and skylights to reduce cooling and heating loads for the building.
Description	**R-01. Residential Heat Pump or High-Efficiency A/C Retrofits and Commissioning.** Replace old A/C technology with a heat pump or high-efficiency A/C coupled with the commissioning of the equipment. **R-03. Residential LED Lighting.** Install LEDs or more efficacious lamps that are energy efficient while producing the same amount of illumination. **R-04. Residential Enclosure Upgrades (with roof assessment).** Improve the envelope efficiency by creating an airtight envelope for improved energy conservation and comfort. Assess roof conditions for remaining useful life; and roof replacement if warranted. **R-05. Residential Window, Door, and Skylight Replacement with Assessment.** Replace window, door, and skylight to improve energy performance. Assess and evaluate window, door, and skylight conditions before replacement. **R-06. Residential Efficient Appliances and Plug Load Management.** Install Energy Star or equivalent appliances to reduce energy consumption. Installing plug load controls allows for user-friendly control and reduced energy consumption.

MEASURE #6

RESIDENTIAL ENERGY EFFICIENCY

	R-07. Domestic Heat Pump for Hot Water. Install an energy-efficient heat pump for domestic hot water. **R-09. Residential Smart Thermostats.** Install smart thermostats to optimize heating, cooling, and preferences to increase energy efficiency, comfort, and ease of use.
Location	Southeast Florida Region
Implementing Agencies and Implementing Authority	Miami-Dade, Palm Beach, Broward, and Monroe counties, and their municipalities, the Miccosukee Tribe of Indians of Florida, and the Seminole Tribe of Florida have the authority to implement the measure through residential programs that offer incentives, rebates, or replacement. Also, the agencies have the authority to invest in the agency-owned facilities under state law, local authority and tribal sovereignty established by the Florida Statues and the U.S. Constitution. Implementation of this measure is supported by s. 163.08, Florida Statutes (Supplemental authority for improvements to real property based on renewable resources).
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 Residential BAU Baseline:** 6,681,538 **Year 2030 Reduction vs BAU:** 805,853 **Year 2050 Reduction vs BAU:** 536,032
Implementation Schedule and Milestones	» **Through 2030**
Metrics for Tracking Progress	» Number and efficiency of residential energy efficiency upgrades » Megawatt-hours (MWh) electricity consumption reduced » Grid emission factors

MEASURE #7

RESIDENTIAL RENEWABLE ENERGY

Overview	The counties and cities in the Southeast Florida Region are leveraging existing residential programs that reduce GHG emissions through building improvements, which reduce the property's energy load and demand, and technology that runs more efficiently. Residential measures R-02 and R-08 address decarbonization by integrating renewable energy provided by on-site photovoltaics and solar hot water systems.	
Description	**R-02. Solar Photovoltaics (PV).** Generate electricity from onsite solar PV panels for single, and multi-family projects (including rooftop, covered parking, sidewalks, floating, and ground mounted). **R-08. Domestic Solar Hot Water Heater.** Replace standard electric or gas domestic hot water systems with a solar water heater.	
Location	Southeast Florida Region	
Implementing Agencies and Implementing Authority	Miami-Dade, Palm Beach, Broward, and Monroe counties, and their municipalities, the Miccosukee Tribe of Indians of Florida, and the Seminole Tribe of Florida have the authority to implement the measure through residential programs that offer incentives, rebates, or replacement. Also, the agencies have the authority to invest in the agency-owned facilities under state law, local authority and tribal sovereignty established by the Florida Statues and the U.S. Constitution. Implementation of this measure is supported by s. 163.04, Florida Statutes (Energy devices based on renewable resources).	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 Residential BAU Baseline:**	6,681,538
	Year 2030 Reduction vs BAU:	750,063
	Year 2050 Reduction vs BAU:	493,401
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Megawatts (MW) of Solar Photovoltaics Installed » Kilowatts (KW) of Solar Hot Water Heater Installed	

4.2.4 BUILDINGS (COMMERCIAL ENERGY)

In the commercial sector, the region's counties and cities intend to reduce GHG emissions through efficient equipment upgrades, building envelope improvements, and intelligent control.

These energy improvement measures reduce the facility's energy consumption, peak load demands, and the pollution associated with fossil fuels and electricity production. The commercial measures include retro-commissioning of existing buildings which will typically provide a 5% reduction in energy consumption at a very low cost and will utilize current technology improvements to improve efficiency. In addition to reducing GHG emissions, there are added benefits to the facility owners, such as savings on the cost of utilities, reduced equipment maintenance, property enhancements, and improved indoor environmental quality and comfort. The prioritized measures within the commercial energy sector are detailed below.

MEASURE #8

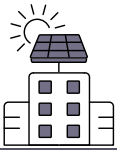
COMMERCIAL ENERGY EFFICIENCY

Overview	Commercial measures C-01, C-03, and C-05 address decarbonization by implementing newer technology for heating and cooling systems, energy-efficient lighting, and smart controls for more efficient energy performance in commercial facilities. Commercial measures C-04 assess and recommend improvements to the roof and ceiling insulation levels and reflectivity. Improving the R-value for existing building enclosures is one of the top ten recommendations by the National Renewable Energy Laboratory (NREL) for the reduction in cooling and heating loads for Florida buildings.
Description	**C-01. Commercial Heat Pump or High Efficiency AC Retrofits and Commissioning.** Replace old A/C technology with a heat pump or high-efficiency A/C coupled with the commissioning of the equipment. **C-03. Commercial LED Lighting.** Install LEDs (or more efficacious lamps) that are energy efficient while producing the same amount of illumination. **C-04. Commercial Enclosure Upgrades (with roof assessment).** Improve the envelope efficiency by creating an airtight envelope for improved energy conservation and comfort, including attic insulation and reflective roofing. Assess roof conditions to ensure roofs are in good condition, not leaking, and not about to reach the end of their useful lifespan. This measure does not include replacing windows, sealing gaps, insulating attics, or optimizing ventilation. **C-05. Commercial Smart Thermostats.** Install smart thermostats to optimize heating, cooling, and preferences to increase energy efficiency, comfort, and ease of use.
Location	Southeast Florida Region

MEASURE #8

COMMERCIAL ENERGY EFFICIENCY

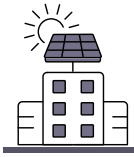
Implementing Agencies and Implementing Authority	Miami-Dade, Palm Beach, Broward, and Monroe counties, and their municipalities, the Miccosukee Tribe of Indians of Florida, and the Seminole Tribe of Florida have the authority to implement the measure through commercial programs that offer incentives, rebates, or replacement. Also, the agencies have the authority to invest in the agency-owned facilities under state law, local authority and tribal sovereignty established by the Florida Statues and the U.S. Constitution. Implementation of this measure is supported by s. 163.08, Florida Statutes (Supplemental authority for improvements to real property based on renewable resources).	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 Commercial BAU Baseline:**	7,300,751
	Year 2030 Reduction vs BAU:	520,047
	Year 2050 Reduction vs BAU:	385,764
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Megawatt-hours (MWh) **e**lectricity consumption reduced » Grid emission factors	



MEASURE #9

COMMERCIAL RENEWABLE ENERGY

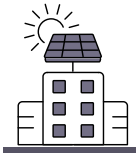
Overview	Commercial measure C-02 addresses decarbonization and pollution reduction by integrating on-site renewable energy provided by solar photovoltaic systems. Rooftop solar PV and covered parking with solar will be the most common installations.



MEASURE #9

COMMERCIAL RENEWABLE ENERGY

Description	**C-02. Solar Photovoltaics (PV).** Generate electricity from onsite solar PV panels for commercial and agency-owned (rooftop, covered parking, sidewalks, floating) with potential battery backup installation.	
Location	Southeast Florida Region	
Implementing Agencies and Implementing Authority	Miami-Dade, Palm Beach, Broward, and Monroe counties, and their municipalities, the Miccosukee Tribe of Indians of Florida, and the Seminole Tribe of Florida have the authority to implement the measure through residential programs that offer incentives, rebates, or replacement under state law and tribal sovereignty established by the U.S. Constitution. Implementation of this measure is supported by s. 163.04, Florida Statutes (Energy devices based on renewable resources)	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 Commercial BAU Baseline:**	7,300,751
	Year 2030 Reduction vs BAU:	330,746
	Year 2050 Reduction vs BAU:	218,447
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Megawatt (MW) of Solar Photovoltaics Installed	



MEASURE #10

TRIBAL RENEWABLE ENERGY

Description	RCT-01. **Solar Microgrid**. 2MW solar grid to support commercial and residential entities.	
Location	Southeast Florida Region	
Implementing Agencies and Implementing Authority	Miccosukee Tribe can implement the measure through programs that offer incentives, rebates, or replacements. Also, the tribe can invest in tribe-owned buildings and facilities under tribal sovereignty established by the U.S. Constitution.	
Potential GHG ($MTCO_2$/Yr) reduction from business-as-usual (BAU) projection	**2030 Commercial & Residential BAU Baseline:**	13,982,289
	Year 2030 Reduction vs BAU:	528
	Year 2050 Reduction vs BAU:	343
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Megawatts (MW) of Solar Photovoltaics Installed	

4.2.5 SOLID WASTE SECTOR

Sustainable food management was identified as a priority, given the significant source of methane emissions in landfills. It significantly impacts GHG reduction in the short term compared to other water management tools. The prioritized measures within the solid waste sector are detailed below.

MEASURE #11

SUSTAINABLE FOOD MANAGEMENT

Overview	Waste management measure #11 is rescuing edible food from entering the waste stream and redistributing to people in need, aligns with Approach 7, Miami-Dade County's Climate Action Strategy to "Create a community-wide food rescue plan in collaboration with community-based organizations, businesses, and farmers." A collaboration between Miami-Dade County and food-generating businesses furthers the mission to nourish people and end hunger. A successful food recovery program requires certain food-generating businesses to donate edible food to a local food recovery organization or service and establish contracts or written agreements with them. The County facilitates these relationships. To do this, the County would build business lists of restaurants, caterers, grocers, and other high-volume food-generating businesses. Key information includes the name of the business, type of business, physical address, and contact information. Simultaneously, the County would build a list of active food recovery/rescue organizations focusing on the LIDAC and other communities focusing on food-generating businesses near neighborhoods where most needs exist.	
Description	**WM-01.** Launch an Edible Food Recovery Program with a goal of diverting 10,000 tons of organics and food waste over five years. The initial goal is to rescue 10,000 tons of food waste from the disposal stream, avoiding 41,612.10 MTCO2E, which is a 17.5% reduction from 2021 GHG Emission levels.	
Location	Miami- Dade County	
Implementing Agencies and Implementing Authority	Miami-Dade County has the authority to implement this measure. Implementation of this measure is supported by s. 403.704, Florida Statutes (Powers and Duties of the Department), and s. 595.420, Florida Statutes (Food Recovery).	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 Solid Waste BAU Baseline:**	2,887,205
	Year 2030 Reduction vs BAU:	41,612

MEASURE #11

SUSTAINABLE FOOD MANAGEMENT

Year 2050 Reduction vs BAU:	41,612
Implementation Schedule and Milestones	» Through 2030
Metrics for Tracking Progress	» Tons of food waste rescued from the disposal stream » Reduction in food waste landfilled or incinerated

4.2.5 AGRICULTURE/NATURAL AND WORKING LANDS SECTOR

Carbon storage in the land use, land use change, and forestry (LULUCF) sector through productive use of forested land and by reducing conversion of land to settlements and agriculture can support GHG emission reductions. The prioritized measures are:

MEASURE #12

SUSTAINABLE AGRICULTURE

Overview	Measure 12, identified by the Seminole Tribe of Florida, is a sustainable no-till agriculture project on 10 Acres of land.	
Description	**A-01.** Implement a no-till sustainable and indigenous-based agriculture farm on 10 acres of land.	
Location	The Seminole Tribe of Florida	
Implementing Agencies and Implementing Authority	Seminole Tribe of Florida has the authority to implement the measure under tribal sovereignty established by the U.S. Constitution.	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 AFOLU BAU Baseline:**	6,424,399
	Year 2030 Reduction vs BAU:	4
	Year 2050 Reduction vs BAU:	4
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Reduction in nitrogen fertilizer application »	

MEASURE #13

REFORESTATION

Overview	Measure 13, identified by the Miccosukee Tribe, prioritizes previously disturbed land or wetlands reforestation.	
Description	**A-02.** Reforest 100 acres of previously cleared land with native species	
Location	Miccosukee Tribe of Indians of Florida	
Implementing Agencies and Implementing Authority	Miccosukee Tribe of Indians of Florida has the authority to implement the measure under tribal sovereignty established by the U.S. Constitution.	
Potential GHG ($MTCO_2$) reduction from business-as-usual (BAU) projection	**2030 AFOLU BAU Baseline:**	6,424,399
	Year 2030 AFOLU Reduction vs BAU:	73
	Year 2050 AFOLU Reduction vs BAU:	73
Implementation Schedule and Milestones	» Through 2030	
Metrics for Tracking Progress	» Acres reforested (non-forest to forest)	

4.3 GHG Emission Reduction by Measure

We modeled emissions reductions from 2024 to 2050 by assuming that each of the reduction measures were applied at a linear rate between 2024 and 2030, and that no further action was taken after that. The exception is measure RCT-01, the installation of 2 MW of solar power by the Miccosukee tribe; for this measure, we assumed that the installation would take place between 2024 and 2025, and also that half of the power would be used in the residential sector and half in the commercial sector. The detailed projects and assumptions that support the GHG reduction potential are outlined in Appendix 2.

Table 4.3-1 Emissions reductions for 2030 by sector vs. 2019 baseline for each GHG reduction measure

		Emissions Reductions after Measures (MTCO2e)			Reduction vs 2019 for Sector (%)		
Sector	Measure	Low	Medium	High	Low	Medium	High
Residential	BAU	0	0	0	34.12%	34.12%	34.12%
Commercial	BAU	0	0	0	30.79%	30.79%	30.79%
Transportation	BAU	0	0	0	5.13%	5.13%	5.13%
All	BAU	0	0	0	12.30%	12.30%	12.30%
Residential	R-01	88,779	169,264	250,233	34.99%	35.79%	36.58%
	R-02	321,119	642,238	963,357	37.28%	40.45%	43.62%
	R-03	31,160	62,134	93,295	34.42%	34.73%	35.04%
	R-04	107,409	224,412	306,011	35.18%	36.33%	37.13%
	R-05	93,795	179,265	265,250	35.04%	35.88%	36.73%
	R-06	13,849	27,615	41,464	34.25%	34.39%	34.52%
	R-07	57,251	106,397	155,838	34.68%	35.17%	35.65%
	R-08	57,968	107,825	157,983	34.69%	35.18%	35.67%
	R-09	22,141	36,766	77,956	34.33%	34.48%	34.88%
Commercial	C-01	147,963	246,818	260,803	32.19%	33.13%	33.26%
	C-02	75,973	330,746	496,119	31.51%	33.93%	35.49%
	C-03	59,670	118,983	178,654	31.36%	31.92%	32.48%
	C-04	62,168	103,460	224,403	31.38%	31.77%	32.92%
	C-05	143,010	50,786	65,910	32.15%	31.27%	31.42%
Residential	RCT-03	264	264	264	34.12%	34.12%	34.12%
Commercial	RCT-03	264	264	264	30.79%	30.79%	30.79%
Transportation	T-01	2,615	5,177	7,792	5.13%	5.14%	5.15%

	T-03	9,045	18,089	27,134	5.15%	5.18%	5.20%
	T-04	851	1,702	2,553	5.13%	5.13%	5.13%
	T-05	8,614	17,228	24,406	5.15%	5.17%	5.19%
	T-06	22	43	66	5.13%	5.13%	5.13%
	TT-01-02	4	4	4	5.13%	5.13%	5.13%
Residential	All	792,501	1,535,709	2,307,943	41.93%	49.26%	56.87%
Commercial	All	577,580	849,337	1,223,564	36.27%	38.84%	42.39%
Transportation	All	20,296	40,927	59,402	5.18%	5.24%	5.29%
All	All	3,318,376	4,353,972	5,518,908	17.04%	18.52%	20.18%

Table 4.3-2 Emissions reductions for 2050 by sector vs. 2019 baseline for each GHG reduction measure

		Emissions Reductions after Measures (MTCO2e)			Reduction vs 2019 for Sector (%)		
Sector	Measure	Low	Medium	High	Low	Medium	High
Residential	BAU	0	0	0	52.14%	52.14%	52.14%
Commercial	BAU	0	0	0	46.62%	46.62%	46.62%
Transportation	BAU	0	0	0	15.94%	15.94%	15.94%
All	BAU	0	0	0	22.84%	22.84%	22.84%
Residential	R-01	62,446	115,703	169,281	52.76%	53.28%	53.81%
	R-02	209,176	418,352	627,528	54.20%	56.27%	58.33%
	R-03	20,298	37,474	60,772	52.34%	52.51%	52.74%
	R-04	74,773	140,285	206,191	52.88%	53.53%	54.18%
	R-05	65,765	122,321	179,219	52.79%	53.35%	53.91%
	R-06	9,021	17,989	27,010	52.23%	52.32%	52.41%
	R-07	41,583	74,103	106,819	52.55%	52.87%	53.20%
	R-08	42,057	75,049	108,239	52.56%	52.88%	53.21%
	R-09	18,350	28,157	67,745	52.32%	52.42%	52.81%
Commercial	C-01	116,026	180,419	194,249	47.72%	48.33%	48.46%
	C-02	107,723	218,447	323,170	47.64%	48.69%	49.69%
	C-03	38,869	77,505	116,374	46.99%	47.36%	47.73%

	C-04	53,559	83,272	164,886	47.13%	47.41%	48.19%
	C-05	157,224	44,568	55,049	48.11%	47.05%	47.14%
Residential	RCT-03	172	172	172	52.14%	52.14%	52.14%
Commercial	RCT-03	171	171	171	46.62%	46.62%	46.62%
Transportation	T-01	1,819	3,600	5,418	15.94%	15.95%	15.95%
	T-03	6,290	12,579	18,869	15.96%	15.97%	15.99%
	T-04	592	1,184	1,775	15.94%	15.94%	15.94%
	T-05	5,990	11,980	16,972	15.95%	15.97%	15.98%
	T-06	15	30	46	15.94%	15.94%	15.94%
	TT-01-02	3	3	3	15.94%	15.94%	15.94%
Residential	All	542,836	1,030,993	1,550,558	57.49%	62.31%	67.43%
Commercial	All	473,009	600,264	852,215	51.11%	52.31%	54.70%
Transportation	All	14,114	28,461	41,308	15.98%	16.01%	16.05%
All	All	1,029,959	1,659,718	2,444,081	24.31%	25.21%	26.33%

Figure 4.3-3 Emissions reductions by sector vs BAU for low emissions reductions

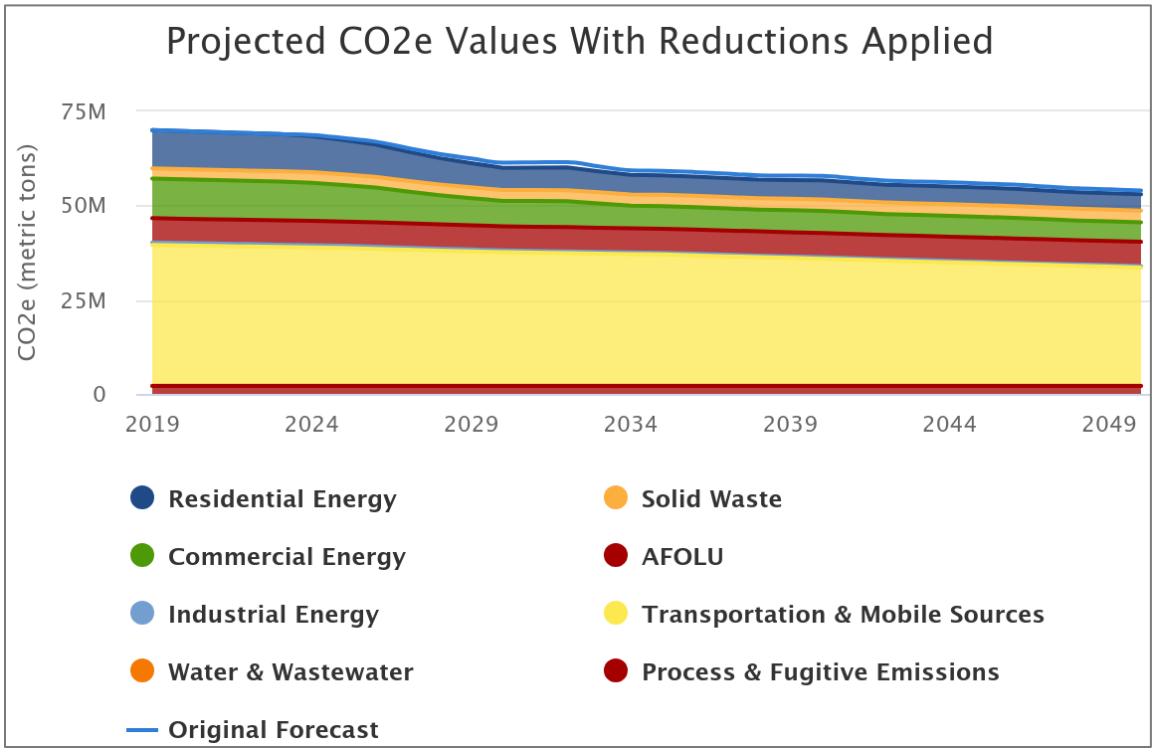


Figure 4.3-4 Emissions reductions by sector vs BAU for medium emissions reductions

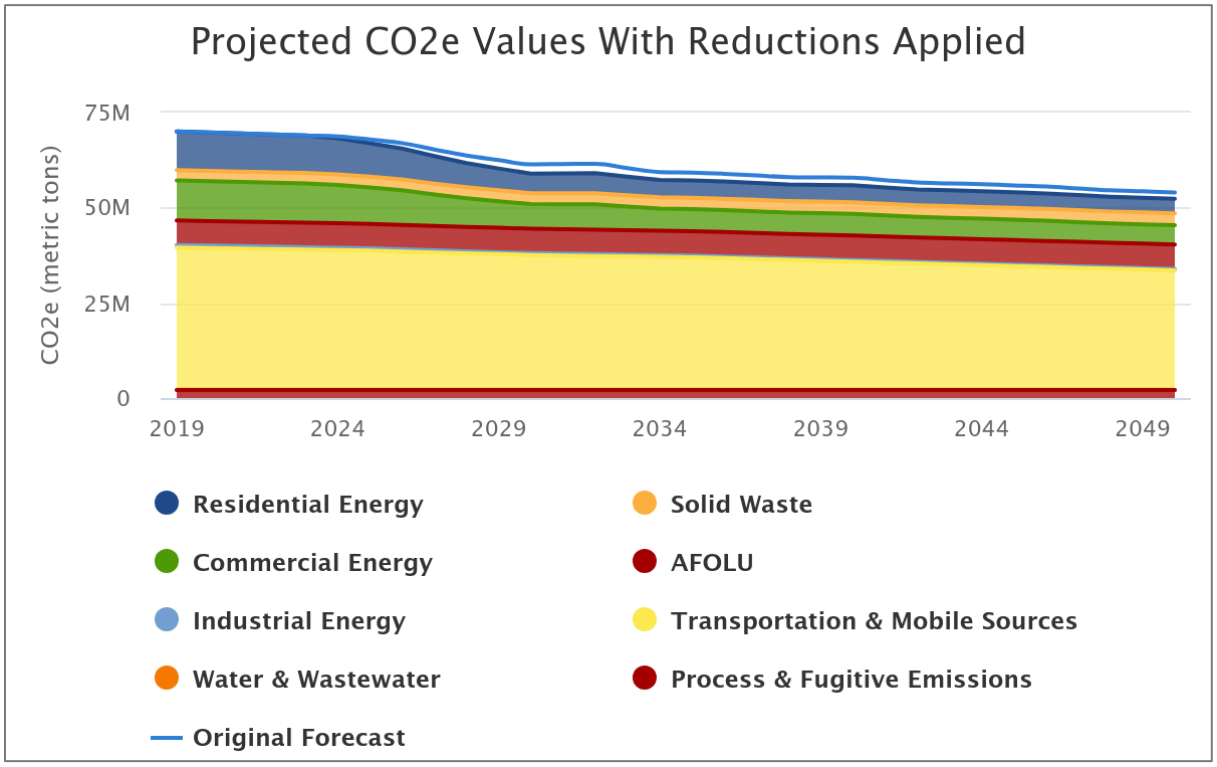
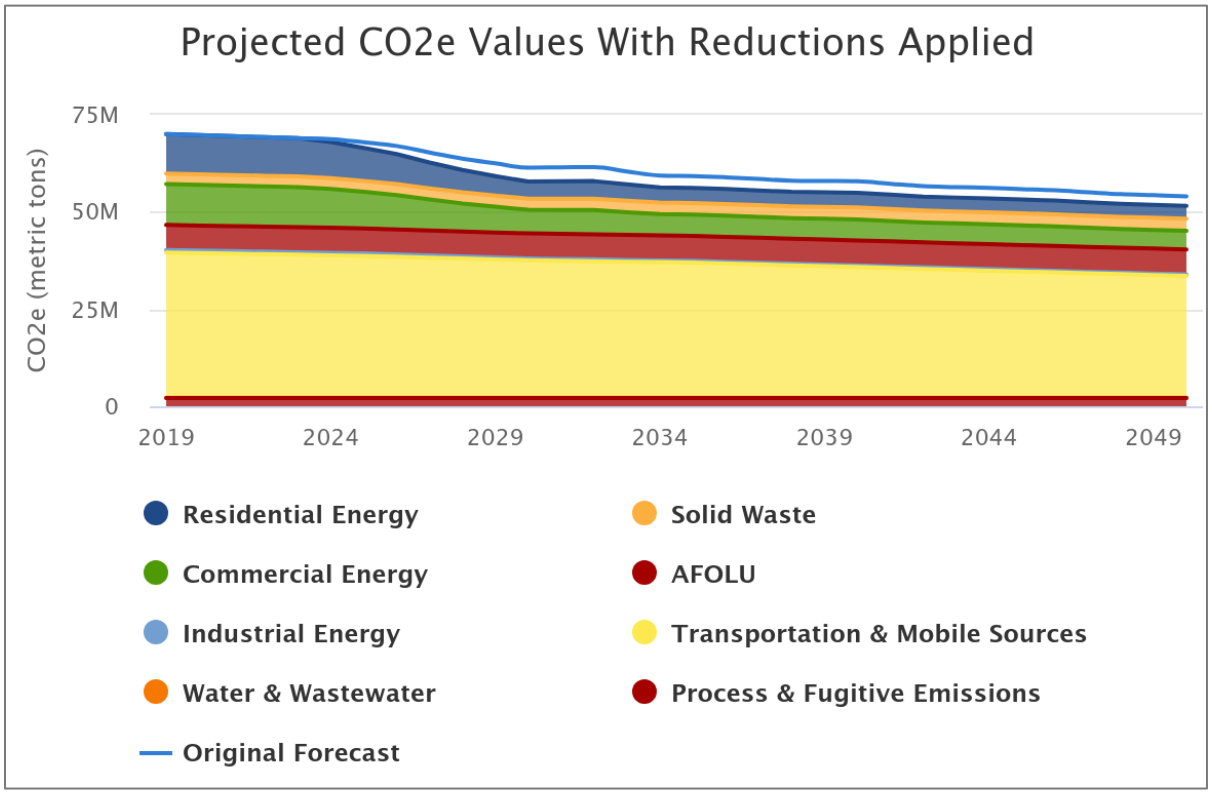


Figure 4.3-5 Emissions reductions by sector vs BAU for high emissions reductions



5 LIDAC BENEFITS ANALYSIS

5.1 LOW INCOME DISADVANTAGED COMMUNITY IDENTIFICATION

LIDACs Identification utilizing the Climate and Economic Justice Screening Tool (CEJST)

The CEJST and the Environmental Justice Screening and Mapping Tool (EJScreen) were used to identify LIDACs. The CEJST tool has an interactive map and uses datasets that contain indicators of burdens in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. The tool ranks most of the burdens using percentiles by census tract. Percentiles show how much burden each tract experiences compared to other tracts. To qualify as a disadvantaged community in CEJST, one of the burden indicators must be above the 90th percentile. Then, combined with the workforce development category which includes indicators for low median income and poverty and counting all tribal communities as LIDACs, LIDACs in the southeast Florida region were identified.

Appendix 3 highlights LIDACs in each of the four counties. As mentioned above, LIDACs include census tracts that meet at least one of EPA's criteria or census tracts in the Tribes. A darker color indicates a LIDAC meets more LIDAC criteria – thus, considered a more vulnerable LIDAC. Identifying the intensity of vulnerability for LIDACs will support prioritization and decision-making related to GHG reduction projects.

LIDACs Identification with the EJScreen Mapping Tool

Similarly, the EJScreen Mapping Tool and its EJ and Supplemental index score were used for each of the environmental quality measures, such as particulate matter, wastewater discharge, traffic proximity and so on (doubling the amount of indices in some cases), to identify LIDACs with any index falling into the 90th percentile of national averages.

A series of maps were produced highlighting LIDACs at the more detailed census block group level in each of the four counties. LIDACs include census block groups that meet at least one of EPA's criteria or census block groups in the tribes. The EJ index and EJ supplement index were separated and a series of maps combining the two indices were produced. Due to the differences in the level of measurement and included variables, LIDACs identified by CEJST and EJScreen may not align perfectly.

5.2 LOW INCOME DISADVANTAGED COMMUNITIES (LIDAC) BURDENS

Identification of LIDAC Burden using CEJST

Table 5.2.1 below summarizes the most commonly identified burdens across LIDACs in the southeast Florida region and by county. The numbers in Table 5.2.1 illustrate how many LIDACs have been identified

as LIDACs due to an indicator, divided by the total number of LIDACs in each jurisdiction. The table shows that the most common burdens include low-income, households in linguistic isolation and low high school attainment, and share of properties at risk of flood in 30 years. These burdens are shared across all four counties as among the major burdens. Housing burden and leaky underground storage tanks are also shared common burdens in Miami-Dade, Broward, and Palm Beach Counties. Miami-Dade and Palm Beach Counties have more communities that suffer from diabetes, while Miami-Dade and Broward Counties have a significant proportion of their communities exposed to concentrations of diesel particulate matter. A few county-specific issues also emerge such as proximity to Superfund sites in Broward County.

Table 5.2.1: Most Common Burdens for LIDAC utilizing CEJST

Indicators	**Overall (n=591)**	**Miami-Dade (n=347)**	**Broward (n=134)**	**Monroe (n=7)**	**Palm Beach (n=110)**
Low-income	467/591	250/347	118/134	5/7	99/110
90% percentile households in linguistic isolation and has low HS attainment	420/591	301/347	65/134	3/7	54/110
90% percentile share of properties at risk of flood in 30 years	356/591	236/347	72/134	7/7	48/110
90% percentile housing burden	274/591	161/347	70/134		43/110
90% leaky underground storage tanks	262/591	164/347	56/134		42/110
90% diabetes	241/591	160/347			40/110
90% percentile diesel particulate matter	221/591	163/347	57/134		
90% percentile proximity to superfund sites			58/134		
90% percentile expected population loss rate				5/7	
90% percentile expected building loss rate					96/110

Note: number of LIDACs identified as vulnerable on an indicator/total number of LIDACs. 2) The blank cells indicate that no LIDACs are identified as vulnerable on an indicator in the county.

Identification of LIDAC Burden using the EJScreen

Table 5.2-2 below summarizes the most commonly identified burdens across LIDACs in the southeast Florida region and by county. The numbers in Table 5.5.1-2 illustrate how many LIDACs have been identified as LIDACs due to an indicator, divided by the total number of LIDACs in each jurisdiction. Overall, more LIDACs are burdened on diesel particulate matter, Superfund site proximity, and underground storage tanks. There are significant heterogeneities across counties in terms of what burdens LIDACs most commonly face. Aside from diesel particulate matter and underground storage tanks, few burdens are shared across counties.

Table 5.2-2: Most Common Burdens for LIDAC using EJScreen

Indicators	**Overall (n=4015)**	**Miami-Dade (n=1843)**	**Broward (n=1119)**	**Monroe (n=71)**	**Palm Beach (n=982)**
90% diesel particulate matter	1249/4015	816/1843	318/1119		145/982
90% percentile superfund proximity	1110/4015		319/1119		
90% percentile underground storage tanks	1099/4015		249/1119	3/71	144/982
90% percentile toxic releases to air			314/1119		
90% percentile traffic proximity			216/1119		120/982
90% percentile hazardous waste proximity		897/1843		3/71	
90% percentile ozone		977/1843			
90% percentile air toxics respiratory HI		828/1843			
90% percentile lead paint		861/1843			

Note: 1) number of LIDACs identified as vulnerable on an indicator/total number of LIDACs. 2) The blank cells indicate that no LIDACs are identified as vulnerable on an indicator in the county.

5.3 LIDAC ENGAGEMENT

A comprehensive survey was conducted from December 14, 2023, to January 5, 2024, combining a broad outreach with targeted methodologies, to identify LIDAC priorities. The invitation to participate in the LIDAC survey was disseminated through different channels within CLEO's extensive networks, leveraging

partner organizations, community residents from our climate programs, listservs, our website, and social media platforms. Additionally, participants were contacted through short messaging service (SMS) and WhatsApp groups, extending our reach to diverse and dynamic audiences.

Needs/Wants Survey: The broad spectrum of the typology of targeted organizations is listed below:

- Community-Based Organizations: local non-profits and community-based organizations actively involved in serving LIDAC.
- Social Services Organizations: provide a range of support services (e.g., healthcare, education) to individuals in need.
- Educational Institutions: establishments providing a structured environment for the purpose of teaching and learning.
- Public Health and Advocacy Groups: focus on addressing disparities in LIDAC.
- County and Local Governments: to enhance the reach of the survey to individuals connected to county services and programs.
- Coalitions: groups of individuals working collectively on issues (e.g., health, education, social justice) affecting LIDAC.

To enhance accessibility, promotional materials and survey questionnaires were crafted in English, Spanish, and Haitian Creole, reflecting our commitment to linguistic diversity. Acknowledging the importance of reaching residents with limited online access, we extended our survey data collection beyond the digital realm. Phone surveys were conducted to ensure the inclusion of those facing barriers to online participation. Simultaneously, an online version of the questionnaire was hosted on a user-friendly platform, encouraging digital engagement and making participation seamless for those with online access.

Recognizing the importance of localized perspectives, the broad survey promotion approach was complemented with a targeted panel survey (phone and online) which targeted survey respondents from specific zip codes (Table 5.3.1). The zip codes were selected as areas that overlap LIDACs listed on CEJST and EJScreen.

Table 5.3-1 - Target Zip Codes for Panel Survey

County	**Target Zip Codes**
Broward	33073, 33076, 33304, 33305, 33306, 33312 ,33313, 33321, 33325, 33328, 33331, 33334, 33441, 33004, 33019, 33024, 33064, 33308, 33314, 33315, 33319, 33323, 33009, 33060, 33069, 33309, 33311
Miami-Dade	33015, 33134, 33149, 33154, 33156, 33161, 33173, 33176, 33179, 33180, 33182, 33183, 33186, 33030, 33055, 33056, 33125, 33141, 33166, 33181, 33014, 33128, 33137, 33139, 33142, 33144, 33157, 33162, 33169, 33012, 33013, 33016, 33054, 33130, 33178, 33127, 33138, 33147, 33150
Monroe	33037, 33051, 33040

Palm Beach	33412, 33480, 33411, 33460, 33463, 33467, 33446, 33428, 33410, 33418, 33408, 33435, 33436, 33437, 33444, 33403, 33404, 33401, 33431

A total of 1,327 surveys (77 by phone, 276 through broad outreach, 974 through targeted outreach) were completed. Of those surveys, 95% (1,255) were completed in English, five percent (67) in Spanish, less than one percent (5) in Haitian Creole. Three percent (45) of the completed surveys were by organizations and 97% (1,282) by individuals. A diverse range of organizations completed the survey. Of the 45 surveys completed by organizations, 67% identified as nonprofit, 7% as political, 24% as governmental, and 2% as for profit. Close to 82% of respondents who completed the individual survey came from the pool of target zip codes.

Figure 5.3-2: Number of Survey Responses by Respondent Type

Respondent Type	Broward	Miami-Dade	Monroe	Palm Beach
Individuals	383	459	72	368
Organizations	8	28	3	6
TOTAL	**385**	**487**	**75**	**374**

Demographics on housing status, ethnicity, and employment status were collected. Of the respondents, 61% were homeowners and 37% were renters. The remaining two percent had other living arrangements, such as staying with a relative. Nineteen percent of respondents in Broward County identified as *Hispanic, Latino or of Spanish Origin*, with 39% in Miami-Dade, 19% in Monroe, and 11% in Palm Beach. Thirty five percent of respondents in Broward County identified as non-white, with 31% in Miami-Dade, 12% in Monroe, and 25% in Palm-Beach. An estimated four percent of all survey participants opted not to disclose their race. Lastly, most participants were employed. Close to 70 participants were unemployed and looking for work at the time they completed the survey.

Stakeholder Engagement Discussion: To foster community feedback, four Stakeholder Engagement sessions in the form of a webinar were organized. Participants who completed the survey questionnaire and expressed interest in the session were given the option to provide their contact information for updates. A notable 611 individuals who completed the survey expressed interest in participating in this session.

The same outreach plan implemented for promoting the survey, ensuring a consistent and inclusive approach was applied. This encompassed leveraging social media platforms to reach a broader audience, collaborating with local organizations to enhance awareness, and tapping into other networks. The promotional materials were thoughtfully crafted in English, Spanish, and Haitian Creole, reflecting accessibility and inclusivity.

Each county-specific discussion session within the Stakeholder Engagement was facilitated by a dedicated moderator, ensuring a conducive and focused environment for meaningful conversations. During these sessions, a notetaker captured valuable discussion comments, contributing to a comprehensive record of community insights. For consistency in the type of data collected, moderators and notetakers received a guide with key questions to raise for group discussion. Furthermore, to preserve the richness of the discussions, each session was audio recorded.

A total of 132 individuals (Broward: 21, Miami-Dade: 83, Monroe: 4, Palm Beach: 24) registered for the discussion sessions. Of those registered, 70% shared information about the industry they worked in: one in consumer products, one in call center outsourcing, one in banking and securities, one in real estate, one in manufacturing, one in advertising, one in accounting, one in high tech, one in federal government, two in agriculture, two in energy/chemical/utilities, three in transportation/distribution, three in medical/pharma/biotech, three in hospitality/travel/tourism, four in financial services, 13 in consulting, 15 in education, 16 in state/local government. Twenty-two reported their industry as "other". Three registrants requested Spanish interpretation and one Haitian Creole.

5.4 LIDAC PRIORITIES

Survey respondents were asked questions related to transportation measures, housing measures, and other services. Each category of measures had a list of items survey respondents could rank (*Extremely Important* to *Not Important At All*). These answers provided insights on what the survey respondents identified as high priorities to reduce GHG pollution in their community. Follow-up questions were also asked about the perceived top benefits of reducing GHG pollution from transportation, housing, and other areas, such as waste management. The next section presents the top priorities by county for individual respondents and identifies the percentage of respondents that identified the priority. The full survey results are presented in Appendix 4.

Broward County

The top three **transportation priorities** reported by individuals in Broward County were:

- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk to: 40%
- Safe and accessible bike routes: 34%
- More efficient bus options (faster, more reliable, improved routes): 33%

The top three **housing priorities** reported by individuals in Broward County were:

- Financial incentives to improve housing conditions: 48%
- Financial incentives to support upgrading appliances, electronics, lighting: 43%
- Financial incentives to upgrade air conditioning unit to a more efficient model: 43%

The top three priorities in **other important areas** reported by individuals in Broward County were:

- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 57%
- Improvements to make agriculture more sustainable: 51%
- Increasing the amount of green spaces and natural areas: 48%

Miami-Dade County

The top three **transportation priorities** reported individuals in Miami-Dade County were:

- More efficient train/Metrorail: 47%
- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk to: 47%
- Safe and accessible bike routes: 43%

The top three **housing priorities** reported by individuals in Miami-Dade County were:

- Financial incentives to improve housing conditions: 52%
- More trees around where people live/work to provide cooling: 51%
- These were equally and highly important:
    - Financial incentives to install rooftop solar panels: 49%
    - Financial incentives to upgrade air conditioning unit to a more efficient model: 49%

The top three priorities in **other important areas** reported by individuals in Miami-Dade County were:

- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 62%
- Increasing the amount of green spaces and natural areas: 55%
- Improvements to make agriculture more sustainable: 55%

Monroe County

The top three **transportation priorities** reported by individuals in Monroe County were:

- Safe and accessible bike routes: 35%
- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk to: 32%
- These were equally and highly important:
    - Financial incentives for electric vehicles: 26%
    - More efficient bus options (faster, more reliable, improved routes): 26%

The top three **housing priorities** reported individuals in Monroe County were:

- Financial incentives to improve housing conditions: 40%
- More trees around where people live/work to provide cooling: 38%

- These were equally and highly important:
    - Financial incentives to install rooftop solar panels: 36%
    - Financial incentives to upgrade air conditioning unit to a more efficient model: 36%

The top three priorities in **other important areas** reported by individuals in Monroe County were:

- Increasing the amount of green spaces and natural areas: 42%
- Improvements to make agriculture more sustainable: 42%
- More reliable trash/waste and recycling services: 40%

Palm Beach County

The top three **transportation priorities** reported by individuals in Palm Beach County were:

- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk to: 33%
- Financial incentives for newer/more reliable vehicle: 30%
- Safe and accessible bike routes: 29%

The top three **housing priorities** reported individuals in Palm Beach County were:

- Financial incentives to improve housing conditions: 53%
- Financial incentives to upgrade air conditioning unit to a more efficient model: 48%
- Financial incentives to support upgrading appliances, electronics, lighting: 47%

The top three priorities in **other important areas** reported by individuals in Palm Beach County were:

- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 61%
- Improvements to make agriculture more sustainable: 51%
- Increasing the amount of green spaces and natural areas: 49%

5.5 Qualitative Analysis of LIDAC Benefits

LIDACs impacted by each of the GHG Reduction Measures were identified, according to different geographical areas where the various measures will be implemented. The overall benefits of GHG emission reduction measures were identified by categories provided by EPA. A benefit matrix was developed that identifies the benefits associated with each GHG emission reduction measure (See Appendix 5). This matrix was developed based on technical guidance from the EPA[1], inputs from community partners, and research and practical experience as professors specializing in related fields.

[1] Data Source: U.S. Environmental Protection Agency (2023). AVERT User Manual v4.2., retrieved from https://www.epa.gov/avert/avert-user-manual

As shown in Appendix 5, the most common significant benefits expected to result from implementation of the proposed GHG emission reduction measures include reducing co-pollutants (ozone, PM2.5 and hazardous air pollutants), creating new job opportunities, increasing community awareness of strategies for reducing GHG, reducing GHG emissions, and improved public health (e.g., decreased risk of asthma, reduction in hospital admissions). The questions posed in the LIDAC survey intentionally covered a broad range of climate change related issues including vulnerability to sea level rise and more extreme natural hazards. Many of these issues are beyond the scope that could be addressed by a GHG reduction plan. However, such questions contribute to a more robust understanding of issues facing LIDAC communities that can be used to inform future efforts. For this reason, some priorities did not factor as prominently within the analysis of benefits expected to result from implementation of the proposed GHG reduction measures. This GHG reduction plan will work in conjunction with other regional plans, including the Regional Climate Action Plan, to address this broader slate of climate change related issues.

These benefits were compared to the survey results of LIDAC residents' identified priority benefits in each of the four counties. Responses from three questions were filtered from the survey administered by the CLEO institute (see Appendix 4):

- Q9. Benefits to you if the above service priorities related to transportation from Q8 are addressed
- Q11. Benefits to you if the above service priorities related to housing from Q10 are addressed
- Q13. Additional benefits to you if the above other service priorities from Q12 are addressed

These responses were separated by county and whether they came from individual respondents or organization representatives.

A numeric Likert scale was applied to the responses ranking the priority of each benefit as follows: 1 - Extremely Important, 2 - Moderately Important, 3 - Neutral, 4 - Slightly Important, and 5 - Not Important At All. The averages for both individual respondents and organization representatives for each question were calculated. Individual respondents and organization representatives showed different priorities after this calculation, and due to the small sample size of organization representatives, the responses from the individuals were chosen to represent various counties' priorities.

Accordingly, each county's residents' average ratings of each of the benefits in categories of "housing," "transportation," and "others" were classified into High Priority (highlighted in Red), Low Priority (highlighted in Green), and Medium Priority (highlighted in Yellow). The tables included as Appendix 6 highlight the priority benefits identified by residents in each of the counties versus the benefits that can be achieved by the measures proposed to be implemented in that county. This allows for examination of the ways in which the benefits achieved by the proposed GHG emission reduction measures correlate with residents' priorities in each county.

5.6 Quantitative Analysis of LIDAC Benefits

The amount of energy consumption and co-pollutants can be reduced in the identified LIDACs with the proposed GHG Emission Reduction Measures that were quantified. Major co-pollutants estimated include

SOx, NOx, PM2.5, VOCs, NH3, and CO. Table 5.6.1 shows the inventory of co-pollutants in the four Southeast Florida counties in 2020.

Table 5.6-1: Inventory of Co-pollutants (in Tons, 2020)[2]

	SO2	NOx	PM 2.5	VOCs	NH3	CO
Broward County	271.866	15856.39	5644.89	43302.38	2646.71	177300.00
Miami-Dade County	1419.06	24403.66	21194.82	91361.12	6521.82	359755.03
Monroe County	323.66	4314.39	2978.14	26661.21	1902.11	60999.54
Palm Beach County	1667.91	17099.91	7023.46	53348.93	22393.73	228682.46
Total	3682.496	61674.35	36841.31	214673.64	33464.37	826737.03

Note: For each co-pollutant, we highlight (the shaded cell) the county that has the highest inventory among the 4 counties.

Measures in the residential and commercial sectors aim to improve the energy efficiency of residential housing and commercial buildings or reduce the use of fossil fuels by adopting renewable energy (e.g., solar photovoltaics (PV)). A direct benefit of the energy efficiency measures is the reduced electricity consumption in the residential and commercial sector. As shown in Table 5.6-2, in the residential sector, building envelope improvements (R-04 & R-05) and energy-efficient A/C upgrades (R-01) are expected to have the highest energy saving for the LIDACs. In the commercial sector, the energy-efficient A/C upgrades (C-01) and the LED lighting (C-03) are the top two measures for energy saving.

While all the proposed measures in the residential and commercial sectors are implemented locally, the reduction of GHG emissions and co-pollutants may occur statewide because residential and commercial customers' electricity demand is met jointly by generation resources throughout Florida.[3] Therefore, the benefits of reduced co-pollutants for a LIDAC is a total of direct and indirect benefits (i.e. a LIDAC can benefit from the residential or commercial energy efficiency measures or renewable energy measures taken within the county and outside the county). As a result, we estimated the total co-pollutant reduction potential for all LIDACs in the Southeast Florida region for each proposed measure (see Appendix 7 for more details). As shown in Table 5.6-2, in the residential sector, solar PV installation (R-02) and building envelope improvement (R-04 &R-05) can lead to the largest co-pollutant reduction in LIDACs. In the commercial sector, generating electricity from onsite PV in the commercial and agency-owned building/facilities (C-02) and replacing old AC with heat pump or high efficiency AC (C-01) are expected to lead to the highest reduction across all co-pollutants in LIDACs.

[2] Data Source: 2020 National Emissions Inventory (NEI) Data. Retrieved from: https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data

[3] Data Source: U.S. Environmental Protection Agency (2023). AVERT User Manual v4.2., retrieved from https://www.epa.gov/avert/avert-user-manual

Table 5.6-2: Reduced Electricity Consumption (Energy Saving) and Co-pollutant Reduction in LIDACs from Residential and Commercial Sector Measures

		Reduced Electricity Consumption (MWh)	SO2 Reduction (lb)	NOx Reduction (lb)	PM2.5 Reduction (lb)	VOCs Reduction (lb)	NH3 Reduction (lb)
Residential							
R-01	Heat Pump /High-Efficiency AC Retrofits	185,730	180.20	2692.41	1902.71	233.20	747.30
R-02	Solar PV		954.00	14479.64	9820.93	1272.00	3953.81
R-03	LED Lighting	78,424	79.50	1144.80	810.90	100.70	318.00
R-04	Enclosure Upgrades (roof)	228,728	227.90	3317.81	2353.21	291.50	927.50
R-05	Window, door, and skylight replacement	228,728	227.90	3317.81	2353.21	291.50	927.50
R-06	Efficient Appliances and Plug Load Management	34,391	31.80	503.50	355.10	42.40	137.80
R-07	Heat Pump DHW	112,942	111.30	1637.70	1155.40	143.10	455.80
R-08	Solar Hot Water Heater	115,519	116.60	1674.80	1187.20	148.40	466.40
R-09	Smart Thermostats	32,411	31.80	471.70	333.90	42.40	132.50
Commercial							
C-01	Heat Pump /High-Efficiency AC Retrofits	209,634	212.00	3042.21	2157.11	259.70	848.00
C-02	Solar PV		492.90	7510.12	5045.61	651.90	2045.81
C-03	LED Lighting	148,548	148.40	2157.11	1526.40	190.80	598.90

C-04	Enclosure Upgrades (with roof assessment)	69,878	68.90	1012.30	720.80	90.10	280.90
C-05	Smart Thermostats	27,951	31.80	408.10	286.20	37.10	111.30

Measures in the transportation sector can reduce air pollution by replacing fossil fuel vehicles with alternative fuel vehicles or reducing vehicle miles traveled (VMT). These co-pollutant reduction benefits are direct benefits to LIDAC communities located in the counties that implement the measures. As shown in Table 5.6-3, the agency fleet decarbonization in all four counties is going to have the largest impacts on co-pollutant reduction for LIDAC communities.

Table 5.6-3: Annual Co-pollutants Reduction in LIDACs from Transportation Sector Measures

		SO2 Reduction (lb/year)	NOx Reduction (lb/year)	PM2.5 Reduction (lb/year)	VOCs Reduction (lb/year)	CO Reduction (lb/year)
Transportation						
T-01	Agency Fleet Decarbonization	470.85	67,343.90	144.68	997.73	48,761.31
T-04	Efficient Port Operations	22.73	3,659.87	254.37	154.04	1,105.71
T-05	Reduce Roadway Vehicle Miles Traveled - Increase Transit Ridership	12.11	132.38	10.00	123.17	10,702.87
T-06	Reduce Roadway Vehicle Miles Traveled - Active Transportation, Complete Street Programs	0.32	3.50	0.26	3.26	283.29
Transportation: Tribe Specific						
TT-01	Decarbonized & Decolonized Food System – Zero emission delivery	0.13	14.39	0.07	0.23	12.56

TT-02	Decarbonized & Decolonized Food System – Zero emission mobile trailer & meat processing station	0.10	1.05	0.08	0.98	85.27

6 Next Steps

The work started as part of this Priority Climate Action Plan will continue to evolve as the region works toward completion of the Comprehensive Climate Action Plan (CCAP) by August 2025. The CCAP will build on the efforts outlined in this report and will include a benefits analysis covering the full geographic scope of the region, as well as analysis of the workforce impacts and intersection with other funding availability. In addition, the region will continue to track its progress toward meeting the goals outlined in this plan and report on such progress by August 2027.

Appendix 1

Greenhouse Gas Emissions Inventory Methodology

GHG Emissions Inventory Methodology

OVERVIEW

This inventory generally follows the accounting guidance in the U.S. Protocol for Community-Scale Greenhouse Gas Emissions Inventories, published by ICLEI. This protocol is specifically geared toward conducting a GHG emissions inventory at the community scale in the United States and attempts to include the majority of emissions from sources within the geographical boundary of the community (excluding electrical power generation), as well as the emissions associated with all electricity usage within the community, even if that electricity is generated outside of the community.

Inventory Scope

The regional inventory is an assessment of community-wide emissions of predominant major greenhouse gasses: carbon dioxide (CO_2); methane (CH_4); and nitrous oxide (N_2O). Due to the likely insignificant contribution of other greenhouse gasses, such as sulfur hexafluoride, nitrogen trifluoride, hydrofluorocarbons, and perfluorocarbons in the region, these gasses have been neglected. Because this inventory follows ICLEI's U.S. Community-Scale Protocol, it does not include all activities within the Southeast Florida region that drive an increase or decrease in atmospheric GHG emissions. Rather than trying to account for every source of emissions, this approach focuses on monitoring progress on the largest emissions sources that can most directly be influenced by local government actions. Therefore, the inventory scope focused on sectors at the regional scale, inclusive of transportation and stationary energy sources.

- Transportation: gasoline and diesel consumed by on-road transportation; diesel consumed by rail; diesel consumed by commercial marine vehicles; jet fuel loaded at major airports; and all types of fuels consumed by other non-road transportation activities.
- Stationary Energy: electricity, natural gas, and non-utility fuels consumed by residential, commercial, and industrial buildings
- Solid Waste: emissions generated by combusted and landfilled municipal solid waste
- Wastewater: biochemical emissions generated during the processing of wastewater

- Agriculture, Forestry, and Other Land Use: emissions associated with tree removals; and biochemical emissions from growing rice and legumes, application of nitrogen fertilizer, and oxidation of muck soils.

Activity-Based Inventorying

This inventory uses activity-based inventorying to estimate emissions. For each source, an activity is quantified. Examples of emitting activities include driving a diesel-powered vehicle a certain number of miles, landfilling a certain mass of municipal solid waste, or consuming a certain amount of electricity. Each activity is then multiplied by an emissions factor that quantifies the amount of CO_2, CH_4, or N_2O associated with each unit of that activity. Examples of emissions factors include the mass of CO_2 emitted when driving a diesel-powered vehicle one mile, the mass of CH_4 emitted by anaerobic decomposition of one ton of municipal solid waste in a landfill, or the mass of N_2O emitted by the burning of fuel to produce one kWh of electricity.

Global Warming Potential

This inventory uses the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment, 100-year values for global warming potentials (GWP) to calculate GHG emissions. The GWP allows the comparison of how much heat different greenhouse gasses trap in the atmosphere relative to carbon dioxide and allows their heating potential to be expressed in CO_2-equivalents (CO_2e). Specifically, it is a measure of how much energy the emissions of one ton of a gas will absorb over a given period of time relative to the emissions of one ton of carbon dioxide (CO_2), and takes into account various factors such as how absorbent the gas is and how long it remains in the atmosphere. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over a certain time period. As atmospheric and climate science findings evolve, the GWP of each gas has been updated to better reflect the global warming impact of emissions.

TABLE 1: GLOBAL WARMING POTENTIAL (GWP) VALUES RELATIVE TO CO_2
(100-YEAR TIME HORIZON)

GHG NAME	CHEMICAL FORMULA	IPCC FIFTH ASSESSMENT (AR5)
Carbon dioxide	CO_2	1
Methane	CH_4	28
Nitrous Oxide	N_2O	265

Inventory Platform

ICLEI's ClearPath community-scale inventory platform was used to conduct calculations of GHG emissions. ClearPath is a cloud-based application for energy and emission management created and supported by ICLEI, and the most widely-used software tool for managing local government climate mitigation efforts in the U.S.

SECTOR DETAILS

Residential, Commercial, and Industrial Energy

Residential, commercial, and industrial energy usage comprise use of utility-supplied grid electricity, utility-supplied natural gas, and use of non-utility fuels such as propane by buildings in the community.

Electricity

Florida Power and Light (FPL) provided electricity usage data for Broward, Miami-Dade, and Palm Beach Counties, separated into residential, commercial, and industrial sectors. FPL does not service Monroe County.

Homestead Public Services Energy usage data was provided by Miami-Dade County. This data is undocumented.

KEYS Energy Services provided data for Monroe County. Data listed as “Residential” or “Senior Citizen” were combined and used for the residential sector. All other data was combined and used for the commercial sector.

Florida Keys Electric Cooperative supplied data for Monroe County, separated into residential, commercial, and industrial sectors

Lake Worth Utilities, which supplies electricity to customers in Palm Beach County, did not supply data.

CO_2 emission factors for electricity were taken from NextEra Energy reporting on FPL emissions and used for all electricity in the region. Other emission factors were taken from the EPA’s eGRID system. Data from the FRCC eGRID subgrid was used.

Natural Gas

No utility provides natural gas to Monroe County.

TECO Peoples Gas supplied residential and commercial usage data for Broward, Miami-Dade, and Palm Beach County.

The City of Sunrise, FL Gas System provided total natural gas usage for Broward County. The utility recommended that we assign 43% of the usage to residential customers and 57% to commercial customers based on prior data. We followed this recommendation.

Florida City Gas provided residential, commercial, and industrial usage data for Miami-Dade County. Florida City Gas also provides service to customers in Palm Beach County but did not provide that data.

Florida Public Utilities provides natural gas to customers in Broward and Palm Beach Counties, but did not provide data.

Emissions factors come from the EPA’s Emission Factors Hub.

Non-Utility Stationary Fuel

Estimates of total statewide propane and distillate fuel oil use for residential and commercial buildings were taken from the U.S. Energy Information Administration (EIA) reports:

- *Residential Sector Energy Consumption, Florida*
- *Commercial Sector Energy Consumption, Florida*

Residential usage data was divided by the population of Florida for each inventory year (from the U.S. Census 5-year American Community Survey results, table DP05) to produce a per-capita average consumption for the state, then multiplied by the population of each County (from the same U.S. Census data), to estimate total residential usage for each County.

Commercial usage data for each County was calculated in the same way, with the understanding that some other scaling factor other than population would probably produce more accurate estimates. However, the easy availability of population data prompted its use. EIA commercial non-utility fuel includes gasoline; however, because this data is likely to be mostly gasoline usage in lawn and garden equipment, and because lawn and garden gasoline usage is also included in our estimates of non-road mobile sources of emissions, we have excluded it from this sector.

Since industrial data is unlikely to scale with population, we preferred to use the EPA's Facility Level Information on Greenhouse gases Tool (FLIGHT) to search for large emitters of GHGs associated with the consumption of non-utility fuel. However, only two such sources exist in the region, both cement manufacturing facilities. These facilities produce GHG emissions associated with the consumption of non-utility fuels, as well as emissions associated with the chemical production process. At both of these facilities, both types of emissions are emitted through a single exhaust stack, making it impossible to separate the two emission sources. We have chosen to include these facilities in the Process and Fugitive Emissions sector.

Emissions factors come from the EPA's Emission Factors Hub.

Table 7: Energy Data Sources

Activity	Data Source	Data Gaps/Assumptions
Residential, Commercial, and Industrial Electricity	Florida Power and Light (FPL), Florida Keys Cooperative, Keys Energy Services	Lake Worth Utilities data is not available
Residential and Commercial Natural Gas Consumption (Sunrise)	TECO and Sunrise Natural Gas Utilities	Sunrise Natural Gas assumes that total usage represents 43% residential, 57% commercial
Residential and Commercial Propane (HGL) and Fuel Oil	American Community Survey, U.S. Energy Information Administration (EIA)	Scaled from state-level EIA data by population
Industrial Natural Gas	Florida City Gas	Florida City Gas data is not available for all four counties. Florida Public Utilities data is not available for any county.

Table 8: Emissions Factors for Electricity Consumption

Emissions Factor/ Year	CO2 (lbs./MWh)	CH4 (lbs./GWh)	N2O (lbs./GWh)	Data Gaps/Assumptions
2019 FPL CPRG	665	55	7	CO2 from Nextera, CH4 and N2O from EPA eGRID

Transportation

On-Road Transportation

Annual vehicle miles traveled (VMT) data for each County was provided by Google's Environmental Insights Explorer (EIE). EIE uses Google's proprietary location history data to estimate travel modes and distances. Although the Florida Department of Transportation provides County-level VMT data for counties in Florida, this data is often not available in other states. Where it is available in other states, methodological differences may make it difficult to

compare data between counties in different states. Therefore, we prefer to use the EIE data, which covers most of the nation at the county level, is methodologically uniform across the country, and can be easily accessed by ICLEI.

For 2019, passenger vehicle and light-duty truck fuel efficiency data were taken from the Bureau of Transportation Statistics and heavy-duty truck fuel efficiency data were taken from an EIA report that has since been deleted.

For 2021, all vehicle fuel efficiency data was taken from the Federal Highway Administration Highway Statistics Series.

For both years, minor differences between the data sources and ClearPath factor sets are due to revisions in the source data after the establishment of ClearPath factor sets.

Emissions factors come from the EPA's Emission Factors Hub.

Aviation

Under the assumption that the number of flights fueled elsewhere and landing at an airport was roughly the same as the number of flights fueled at an airport flying elsewhere was comparable and that the average fuel load for incoming and outgoing flights was the same, we chose to estimate aviation emissions based on total fuel flowage from any regional airport. This simplifies our calculations but makes aviation estimates different from other items by including non-electricity emissions that occur outside of the boundary of the community.

We decided to include all aviation gasoline (avgas) and jet fuel (JF) flowage for all class B, C, and D airports in the region. This is likely to include most aviation emissions in the region without the difficulty of collecting data from a relatively large number of small airfields.

We sent data requests to all operators of these airports. Where an airport supplied data on one type of fuel but not the other, it is unclear whether the data is missing or if the airport does not provide that fuel.

Data for Miami Executive Airport and Miami-Opa Locka Airport has been included in previous inventories completed by the County. However, this data was undocumented and small enough that we decided to exclude it.

Table X shows each airport and the data provided.

Table X: Provision of Avgas and JF Data from Airports. An X indicates that data was provided.

Airport	Airspace Class	County	Avgas	JF
Miami International	B	Miami-Dade		X
Fort Lauderdale-Hollywood International Airport	C	Broward		X
Palm Beach International Airport	C	Palm Beach		X
Boca Raton Airport	D	Palm Beach	X	X
Fort Lauderdale Executive Airport	D	Broward	X	X
Key West International Airport	D	Monroe	X	X
Miami Executive Airport	D	Miami-Dade		
Miami-Opa Locka Executive Airport	D	Miami-Dade		
Pompano Beach Airpark	D	Broward	X	X

Emissions factors come from the EPA's Emission Factors Hub.

Rail, Commercial Marine, and Other Non-Road

For other transportation emission estimates, we used County-level data provided by the EPA via their 2020 National Emissions Inventory (NEI). Although 2020 is likely to be an anomalous year due to the effects of the COVID-19 pandemic, we chose to use this data for its availability.

In the NEI data retrieval tool, we filtered to select only GHG as the pollutant and for each County as the location. The Counties are particularly interested in rail and seaport data.

For commercial marine emissions, we selected “Marine Vessels, Commercial” for SCC Level 2 and combined all data for each County. This data includes port data as well as underway data for activity within 200 miles of the coast.

For rail, we selected “Railroad Equipment” for SCC Level 2 and combined all data not labeled as “Railway Maintenance” for each County.

For all other non-road transportation and mobile sources, we used an ICLEI-provided Excel spreadsheet to combine all other non-road mobile sources in the NEI database and combine them by fuel type.

Since the NEI provides emission estimates, no emission factors were necessary.

Table 9: Transportation Data Sources

Activity	Data Source	Data Gaps/Assumptions
Vehicle Miles Traveled	Google Environmental Insights Explorer (EIE)	No data gaps or assumptions were identified.
Off-Road Diesel, CNG, LPG, Rail, Commercial Marine	EPA National Emissions Inventory (NEI)	2020 data (all), Sum of Freight (Line Haul Locomotives: Class I + Class II/III Operations) and Passenger (Line Haul Locomotives: Commuter Lines + Passenger Trains (Amtrak)), rows 104 and 105 of tab COUNTY NEI Directions (rail)
Airport fuel flowage	Individual airports	Several airports did not respond to data requests

Table 10: Emissions Factors for Transportation - 2019 US National Defaults (Updated 2021)

Fuel	Vehicle Type	MPG	CH4 (g/mile)	N2O (g/mile)
Gasoline	Passenger Vehicle	24.10	0.0183	0.0083
Gasoline	Light Truck	17.60	0.01930	0.0148
Gasoline	Heavy Truck	5.37	0.07850	0.0633
Gasoline	Motorcycle	24.10	0.01830	0.0083
Diesel	Passenger Vehicle	24.10	0.00050	0.0010
Diesel	Light truck	17.60	0.0010	0.0015
Diesel	Heavy truck	6.39	0.0051	0.0431

Solid Waste

Landfill and Combustion

Mass of municipal solid waste recycled and incinerated by each County was provided by Florida Department of Environmental Protection county solid waste management reports. The 2020 reports, the most recent available, were used for 2021.

These reports also contain data on waste composition. To match classifications in the reports to the classifications used in ClearPath, we assumed that “Yard Waste” could be divided equally among branches, leaves, and grass and that 25% of “Construction and Demolition” was dimensional lumber.

Table 11: Solid Waste Data Sources

Activity	Data Source	Data Gaps/Assumptions

Combusted and Landfilled Solid Waste	FL DEP County Reports County Overview Report 2019 and 2020	No data gaps or assumptions were identified.

Table 12: Florida Department of Environmental Protection Waste Characterization for Solid Waste - Broward

Waste Type	Percentage
Newspaper	2.02
Office Paper	2.35
Corrugated Cardboard	5.04
Magazines / Third Class Mail	13.46
Food Scraps	10.44
Grass	0.73
Leaves	0.73
Branches	0.73
Dimensional Lumber	4.72

Table 13: Florida Department of Environmental Protection Waste Characterization for Solid Waste - Miami-Dade

Waste Type	Percentage
Newspaper	2.23
Office Paper	2.30
Corrugated Cardboard	5.36
Magazines / Third Class Mail	15.54
Food Scraps	12.43
Grass	2.10
Leaves	2.10
Branches	2.10
Dimensional Lumber	5.43

Table 14: Florida Department of Environmental Protection Waste Characterization for Solid Waste - Monroe

Waste Type	Percentage
Newspaper	4.40
Office Paper	0.71
Corrugated Cardboard	1.03
Magazines / Third Class Mail	0.37
Food Scraps	21.05
Grass	1.37
Leaves	1.37
Branches	1.37
Dimensional Lumber	8.00

Table 15: Florida Department of Environmental Protection Waste Characterization for Solid Waste - Palm Beach

Waste Type	Percentage
Newspaper	2.95
Office Paper	2.44
Corrugated Cardboard	7.22
Magazines / Third Class Mail	18.31
Food Scraps	16.66
Grass	1.10
Leaves	1.10
Branches	1.10
Dimensional Lumber	1.64

Wastewater

Wastewater

Water and wastewater data are typically difficult to obtain, due to the high number of operators in the region and variety in treatment processes for wastewater (which all produce different amounts of different types of greenhouse gas). Additionally, grid electricity usage, which causes all emissions associated with potable water operations and is typically the largest source of emissions associated with wastewater treatment, is already included in utility-supplied grid electricity usage data for the commercial sector. Since the remaining process emissions tend to be a small fraction of overall community emissions, we decided to use a simple population-based estimate for wastewater process emissions, making reasonable assumptions about wastewater treatment methods supplemented with actual details on operations where available.

Table 16: Wastewater Data Sources

Activity	Data Source	Data Gaps/Assumptions
Population	US Census, individual responses from water utilities	Calculations assume that the entire region except Monroe County uses anaerobic processes and nitrification and denitrification, that 34% of wastewater effluent is delivered to the ocean (based on Miami-Dade County data), and that per-capita amounts of flared and combusted digester gas match Miami-Dade County's

Process & Fugitive

All Process & Fugitive

To include any other major sources of GHGs, including nitrogen trifluoride, sulfur hexafluoride, hydrofluoroalkanes, and perfluoroalkanes, we examined the EPA's FLIGHT system for any sources of GHGs not included elsewhere in the inventory (e.g. landfills).

The only two sources we found were both cement manufacturing facilities in Miami-Dade County. Reports for both of these facilities informed us that, due to a combined stack, both process and combustion emissions were included. Any combustion emissions should properly be included in the industrial sector, but since they cannot be separated from process emissions, we have included them here. Any utility-supplied natural gas combusted at these facilities will be double-counted with industrial sector utility-supplied natural gas, but we expect this overlap to be small.

Table 17: Process & Fugitive Data Sources

Activity	Data Source	Data Gaps/Assumptions
Process and Stationary Combustion	EPA FLIGHT system	Includes both process and stationary combustion emissions. Does not include small sources of emissions. Some emissions may be double counted with industrial emissions.

Agriculture, Forestry, and Other Land Use (AFOLU)

Forestry and Land Use

Emissions associated with forestry and land use change were calculated by using ICLEI's Land Emissions and Removals Navigator (LEARN) tool. This tool uses data from the U.S. Geological Survey's National Land Coverage Database to estimate changes in land use. We set the tool to compare data from 2013 to 2019 (the most recent data included in the tool) to estimate land use change. Using a six-year instead of a three-year window means that less recent data is included in the estimate, but we think this is offset by the advantages of having a longer period to average over, smoothing out any anomalous years. We selected Gainesville, FL, as our analogue community since this is the only Florida community available to use.

Agriculture

Emissions from livestock across the four-county region, as well as from crop cultivation in Broward and Monroe counties, are expected to be negligible and have been omitted from this inventory. In Miami-Dade and Palm Beach counties, agricultural sources of GHGs include N_2O emissions from nitrogen fertilizers, biological emissions associated with certain crops such as CH_4 from flooded rice fields and N_2O from nitrogen-fixing legumes, CH_4 and from N_2O burning fields, and CO_2 emissions from oxidizing organic soils. Emissions from agricultural fuel use are included under non-road mobile sources in the transportation sector.

According to the USDA Quickstat tool, Miami-Dade County had 55,206 acres of cropland in 2017 (the most recent year for which data is available), and Palm Beach County had 438,911 acres. Miami-Dade County's soil is assumed to be all mineral soil, and Palm Beach County's soil is assumed to be all organic soil.

Nitrogen fertilization

The UF/IFAS Standardized Fertilization Recommendations for Agronomic Crops and UF/IFAS Standardized Nutrient Recommendations for Vegetable Crop Production in Florida recommend between 0 and 240 lb of nitrogen fertilization per acre, depending on the crop. Due to difficulties establishing exact crop types and acreages for crops in Miami-Dade County, we have assumed that nitrogen fertilization occurs at 100 lb (45 kg) per acre for all cropland in Miami-Dade County. The report Nutritional Requirements and Fertilizer Recommendations for Florida Sugarcane recommends no nitrogen fertilization of organic muck soil for sugarcane crops, so we have assumed that no nitrogen fertilizer is used in Palm Beach County.

The default value for nitrogen emissions from synthetic crops is 0.01 kg (N_2O-N), taken from Table 11.1 of Chapter 11 of the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4: Agriculture, Forestry, and Other Land Use, the conversion from N_2O-N to N_2O is 44/28.

Emissions from nitrogen fertilizer usage in Miami-Dade County is therefore:

55,206 ac × 45 kg/ac fertilization × 0.01 kg (N_2O-N) × 44/28 = 39,038 kg N_2O,

which is 10,345 MTCO2e

Rice and legumes

According to Chapter 5 of the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4: Agriculture, Forestry, and Other Land Use, daily baseline emissions for North American rice are 0.65 kg CH_4/ha · d (table 5.11), scaling factor for irrigated rice (according to Quickstats, PBC rice is irrigated) is 0.60 (table 5.12), and default number of days is 139 (table 5.11a). According to a personal phone call with UF/IFAS staff, roughly 25,000 acres (10,000 ha) of irrigated rice is cultivated in Palm Beach County. So emissions from rice fields in Palm Beach County are:

10,000 ha × 0.65 kg CH_4/ha · d × 0.60 × 139 d = 542,000 kg CH_4,

which is 15,200 MTCO2e.

From the USDA Quickstat tool, Palm Beach County had 6,667 ac, or 2,698 ha of legumes, in 2017. According to the 2023 study Evaluation of Agricultural Land Use Trends and Outlook in Miami-Dade County, Florida, Miami-Dade County has 7,555 ac of legumes, or 3,060 ha. Annual legume emissions in Palm Beach County are therefore:

2,698 ha × 1 kg(N_2O-N) × 44/28 = 4,236 kg N_2O

or 1,122 MTCO2e

and in Miami-Dade County are

3,060 ha × 1 kg(N_2O-N) × 44/28 = 4,804 kg N_2O

or 1,237 MTCO2e.

Field Burning

Burning of sugarcane fields in Palm Beach County causes emissions of CH_4 and N_2O. The USDA Quickstat tool shows 289,000 ac of sugarcane being grown in 2017, and a personal phone call with the U.S. Forest Service suggests that around 280,000 ac is burnt each year, or 97%. From the USDA Quickstat tool, Palm Beach County produced 11,604,222 tons of sugarcane in 2017. From table 11.1a of Chapter 11 of the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4: Agriculture, Forestry, and Other Land Use, the default residual mass after harvest for perennial grasses is 10%, or 1,604,422 tons, and we assume that 97%, or 1,124,284 tons of residue remain in areas that are burned.

From table 2.6 of Chapter 2 of the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4: Agriculture, Forestry, and Other Land Use, the combustion factor for agricultural sugarcane residue is 0.8, and from table 2.5, the emissions factor for burning agricultural residue for CH_4 is 2.7 g/kg and for N_2O is 0.07 g/kg.

CH_4 emissions are therefore:

1,124,284 kg × 0.8 × 2.7 g/kg = 2,428,453,000 g CH_4

or 67,997 MTCO2e, and N_2O emissions are:

1,124,284 kg × 0.8 × 0.07 g/kg = 2,428,453,000 g N_2O

or 16,684 MTCO2e, for a total of 84,681 MTCO2e from field burning.

Oxidizing soil

From a personal phone call with UF/IFAS staff, approximately 420,000 ac of muck soil is farmed in Palm Beach County. However, 25,000 ac (10,000 ha) of that farmed land is used for rice, which typically reduces soil oxidation rates, leaving 395,000 ac (160,000 ha) of non-rice muck.

From the Everglades Foundation's study Carbon Assessment of the Everglades Agricultural Area, the emission factor for eroding muck soil is 35 MTCO2e/ha. From the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands, table 2.1, the emission factor for tropical rice paddies on drained inland wetlands (recommended by Tiffany Troxler, co-editor of the Supplement) is 9.4 tons C/ha. This number is converted to CO_2 by a conversion factor of 44/12.

Soil oxidation emissions from rice areas are:

10,000 ha rice × 9.4 t C × 44/12 = 345,000 MTCO2e,

and for non-rice areas:

160,000 ha × 35 MTCO2e / ha = 5,600,000 MTCO2e.

Table 18: AFOLU Data Sources

Activity	Data Source	Data Gaps/Assumptions
Forests & Trees	ICLEI LEARN tool	No data gaps or assumptions identified.
Crop agriculture area	USDA Quickstats	No data gaps or assumptions identified.
Crop yield	USDA Quickstats	No data gaps or assumptions identified.
Fertilizer application to mineral soil	UF/IFAS	Assumes a "reasonable" rate.
Annual area burned	Forestry Service	No data gaps or assumptions identified.

Table 19: AFOLU Emission Factors

Activity	Emission Factor	Source
Fertilizer application	0.01 [kg N2O - N / kg N]	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Oxidation of muck soil	35 MTCO2e / ha	Everglades Foundation's Carbon Assessment of the Everglades Agricultural Area
Irrigated rice methane	0.65 kg CH4 / ha d	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories
Field burning	2.7g / kg CH4; 0.07 g / kg N2O	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories

Appendix 2

Greenhouse Gas Reduction Measures -

Project Description

Project Description

ID	Measure	Project Description	Implementing Agency	Measure-Specific Activity Data	
				Value	Units
T-01	Agency Fleet Decarbonization	Countywide EV Vehicle Fleet Initiative	Miami-Dade County	775.00	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Replacement of 20 Refuse trucks with CNG	Miami-Dade County	20.00	vehicles/day
				23400	miles/year
				186	ton CO2/year
				179	ton CO2/year
		Replacement of 15 Refuse trucks with EVs	Miami-Dade County	15.00	vehicles/day
				23400	miles/year
				186	ton CO2/year
				81	ton CO2/year
		Electrify the city's fleet of trolleys	City of Miami Beach	5200000	miles/yr
				116	buses
				2839	g CO2/mile
				1738	g CO2/mile
		Electrification of City Fleet	City of Coral Gables Office of Mobility and Sustainability:	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Electrification of City Fleet	Village of Pinecrest: Vehicle Fleet Gasoline	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Electrification of City Fleet	City of Coral Springs	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Electrification of City Fleet	City of Boca Raton Office of Sustainability	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Electrification of City Fleet	City of West Palm Beach Office of Sustainability	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Bus Electrification	Palm Beach Transit	27	Vehicles
				45000	miles/year
				0	ton CO2/year
				0	ton CO2/year
		Electrification of City Fleet and associated charging infrastructure	City of Hollywood Office of Environmental Sustainability	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Electrification of City Fleet	City of Sunrise Office of Environmental Sustainability	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Electrification of Charter School bus fleet	City of Pembroke Pines Office of Public Services:	10	Vehicles
				15000	miles/year
				30	ton CO2/year
				14	ton CO2/year
		Electrification of City Fleet	Broward County	720	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
				371	Vehicles

ID	Measure	Project Description	Implementing Agency	Measure-Specific Activity Data	
				Value	Units
		Bus Electrification	Broward County Transit	45000	miles/year
				0	ton CO2/year
				0	ton CO2/year
		Electrification of Fleet	Miccosukee Tribe of Indians of Florida,	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Electrification of Fleet	The Seminole Tribe of Florida	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
		Electrification of Fleet	Monroe County	10	Vehicles
				12,400	miles/year
				5	ton CO2/year
				2	ton CO2/year
T-02	Agency Fleet Decarbonization	Installation of agency owned charging infrastructure/ fleet transition support	Broward County	194	L2 Charging Ports
			Monroe County	50	L2 Charging Ports
			Miami-Dade County	66	L2 Charging Ports
			Miami-Dade County	3	DCFC Charging Ports
T-03	EV Charging Infrastructure	Acquisition, installation, and operation of publicly accessible electric vehicle charging infrastructure. Install Public EV Charging Station Deployment (Level 2) and Public EV Charging Station Deployment (Level 3)	Miami-Dade County	100	DCFC Charging Ports
			Miami-Dade County	390	L2 Charging Ports
			City of Miami Beach	10	L2 Charging Ports
			City of North Miami	10	L2 Charging Ports
			City of North Miami	5	DCFC Charging Ports
			City of Coral Gables	54	L2 Charging Ports
			Broward County	40	DCFC Charging Ports
			Broward County	200	L2 Charging Ports
			City of Sunrise	10	L2 Charging Ports
			City of Hollywood	10	L2 Charging Ports
			City of Boynton Beach	4	L2 Charging Ports
			Palm Beach County	200	L2 Charging Ports
			Palm Beach County	40	DCFC Charging Ports
			Miccosukee Tribe of Indians	10	L2 Charging Ports
			The Seminole Tribe of Florida	10	L2 Charging Ports
			Monroe County	32	DCFC Charging Ports
			Monroe County	50	L2 Charging Ports
T-04	Efficient Port Operations	Shorepower Phase 1 and 2 - electric charging at 5 cruise boat terminals	Port Everglades	916	calls/year
				9	hours/call
		Hybrid Tug Boat	Miami-Dade County	208000	g CO2e/hr
				153000	g CO2e/hr
				1400	hr/year
		Shorepower Phase II - electric charging at 2 cruise boat terminals	Miami-Dade County	366	calls/year
				9	hours/call
		Hybrid and Electric Cargo Equipment	Miami-Dade County	100.00	vehicles
				28	ton/year
				11	ton/year
		Implement smart port technology at 1 gate	Miami-Dade County	8	minutes
				3	minutes
				500	trucks
				2	idle episodes
				262	days per year
		LED Lighting Upgrade on Public Bridges (FDOT POM 195)	Miami-Dade County	1000	bulbs
				100	kWh/bulb
				377.8	g CO2e/kWh
		SMART-North Corridor	Miami-Dade County	9.50	miles
				8000	boardings/day
				76.8%	
				4.52	miles/trip
				7220429	miles/year

ID	Measure	Project Description	Implementing Agency	Measure-Specific Activity Data	
				Value	Units
T-05	Reduce Roadway Vehicle Miles Traveled - Increase Transit Ridership			351.17	g/mile
		SMART-Northeast Corridor	Miami-Dade County	13.50	miles
				7000	boardings/day
				76.8%	
				4.52	miles/trip
				6317875	miles/year
				351.17	g/mile
		Expand Monroe County Transit options with fixed route and on-demand service	Monroe County Transit	>50	miles
				1,047,892	boardings/year
				76.8%	
				50.00	miles/trip
				40239053	displaced miles/year
				351.17	g/mile
T-06	Reduce Roadway Vehicle Miles Traveled - Active Transportation, Complete Street Programs	Everglades Loop	City of Coral Springs	52.40	trips/day
				76.8%	
				4.52	miles/trip
				47294	miles/year
				351	g CO2/mile
		First/Last Mile Multi-Modal Transit Corridor Connections	Miami-Dade County	52.40	trips/day
				76.8%	
				4.52	miles/trip
				47294	miles/year
				351	g CO2/mile
		Making walking, public transportation and other sustainable mobility modes mainstream.	City of Marathon	52.40	trips/day
				76.8%	
				4.52	miles/trip
				47294	miles/year
				351	g CO2/mile
		Walkability Plan - Sidewalks & Tree Canopy Installation.	Miami-Dade County	52.40	trips/day
				76.8%	
				4.52	miles/trip
				47294	miles/year
				351	g CO2/mile
TT_01		Zero emissions delivery (vehicle) grocery or food pantry (truck) for inland tribal food deserts [Big	The Seminole Tribe of Florida	miles/week	
				g CO2/mile	
				g CO2/mile	61.8
TT_02		Zero emissions mobile trailer slaughterhouse &/or mobile meat processing station	The Seminole Tribe of Florida	miles/year	19.6

Project Description

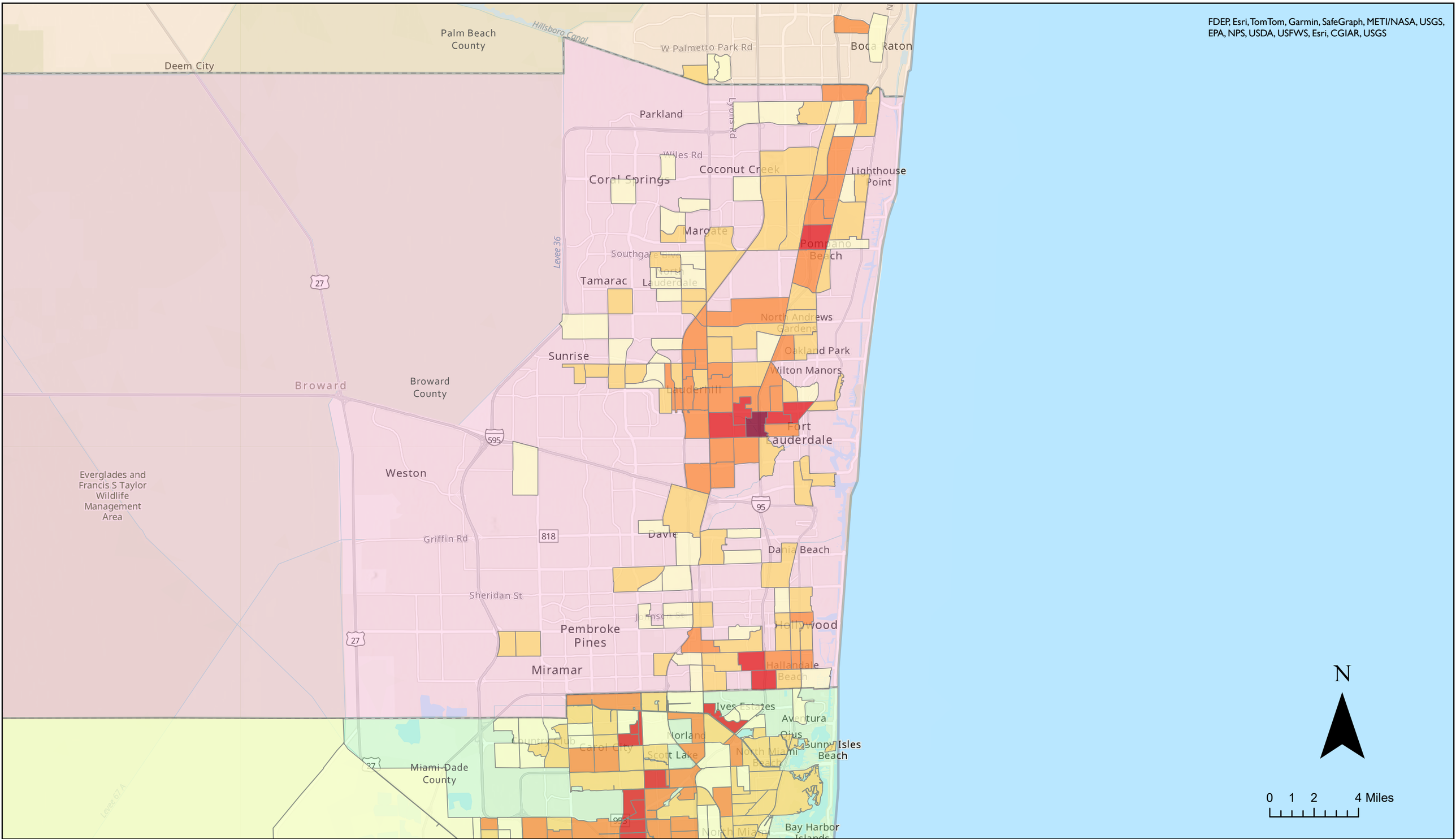
ID	GHG Reduction Measure	Implementing Agency	Measure-Specific Activity Data
R-01	Heat Pump or High Efficiency AC Retrofits and Commissioning	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 350,433 MWh and Natural Gas, Propane, Fuel Oil energy by 2,383 MMBtu.
R-02	Solar Photovoltaics (PV)	Various (Regional Implementation)	10% adoption of this measure is projected to equate to 1,042 MW of PV resulting in the production of 1.511.775 MWh of electricity.
R-03	LED Lighting	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 147,969 MWh
R-04	Envelope improvements with roof assessment	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 431,561 MWh and Natural Gas, Propane, Fuel Oil energy by 2,928 MMBtu.
R-05	Window, door and skylight replacement with assessment	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 431,561 MWh and Natural Gas, Propane, Fuel Oil energy by 2,928 MMBtu.
R-06	Efficient Appliances and Plug Load Management	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 64,888 MWh.
R-07	Heat Pump Domestic Hot Water	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 213,098 MWh and Natural Gas, Propane, Fuel Oil energy by 1,448 MMBtu.
R-08	Solar Hot Water Heater	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 217,960 MWh and Natural Gas, Propane, Fuel Oil energy by 1,479 MMBtu.
R-09	Smart Thermostats	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 61,152 MWh and Natural Gas, Propane, Fuel Oil energy by 418 MMBtu.
C-01	Heat Pump or High Efficiency AC Retrofits and Commissioning	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 395,535 MWh and Natural Gas, Propane, Fuel Oil energy by 44,219 MMBtu.
C-02	Solar Photovoltaics (PV)	Various (Regional Implementation)	10% adoption of this measure is projected to equate to 537 MW of PV resulting in the production of 778,594 MWh of electricity.
C-03	LED Lighting	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 280,278 MWh.
C-04	Envelope improvements with roof assessment	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 131,845 MWh and Natural Gas, Propane, Fuel Oil energy by 14,740 MMBtu.
C-05	Smart Thermostats	Various (Regional Implementation)	10% adoption of this measure is projected to reduce electricity consumption by 52,738 MWh and Natural Gas, Propane, Fuel Oil energy by 5,896 MMBtu.
RTC - 03	2 MW Solar Microgrid	Various (Regional Implementation)	2 MW of PV resulting in the production of 2,900 MWh of electricity.
WM-01	Edible Food Recovery Program	Miami-Dade County	10,000 tons of organics, food waste. Mid-level adoption scenario of 18% in five years (distributed evenly)
A-01	No-till sustainable and indigenous-based agriculture farm	Seminole Tribe	10 Acres
A-02	Tree planting	Miccosukee Tribe	Reforested 100 Acres of land with native species

Appendix 3

Maps of Low Income and Disadvantaged Communities

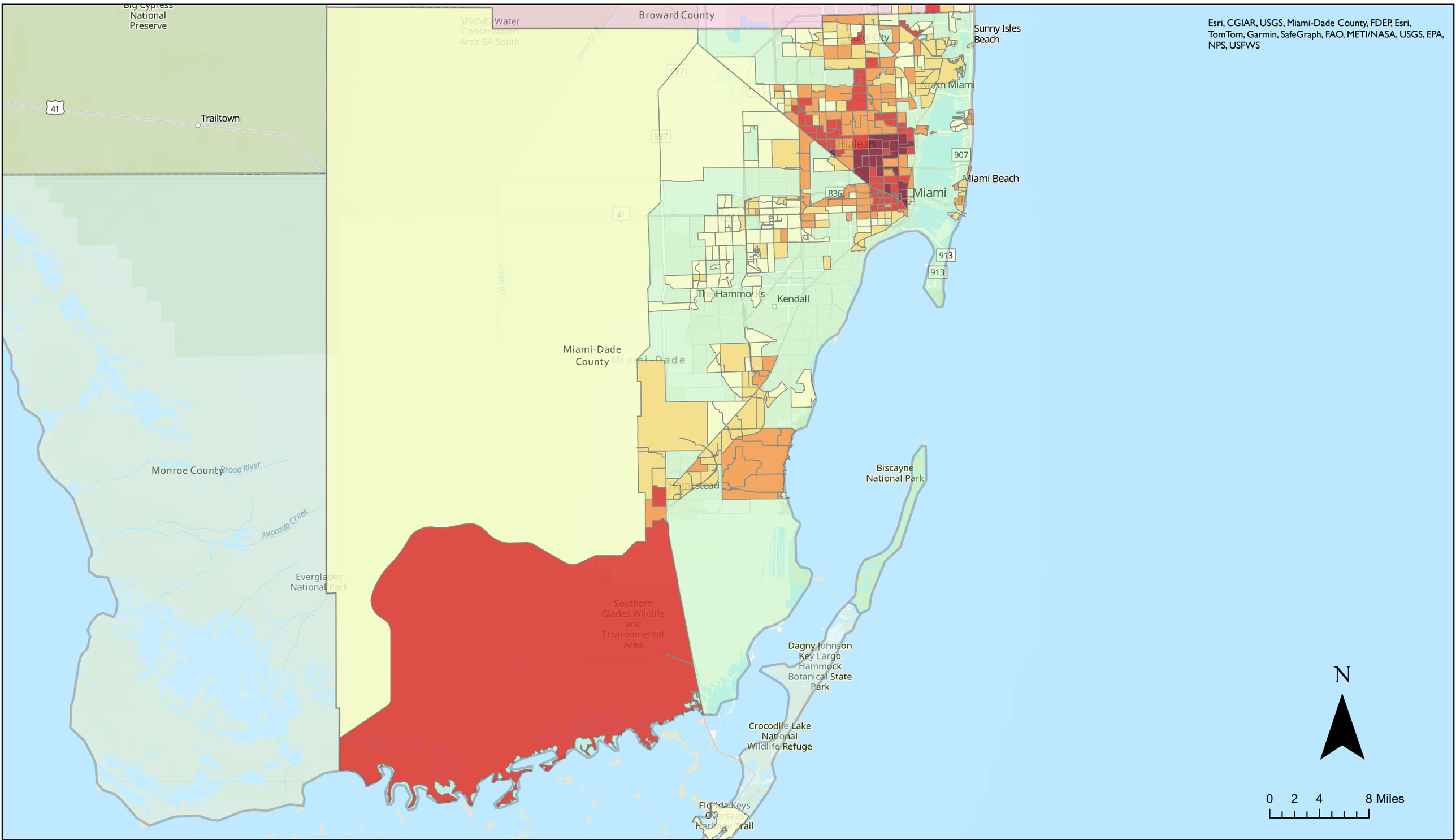
LIDAC Communities in Broward County, FL

Total Number of LIDAC Criteria Met
- 1 - 2
- 3 - 5
- 6 - 8
- 9 - 11
- 12 - 16



LIDAC Communities in Miami-Dade County, FL

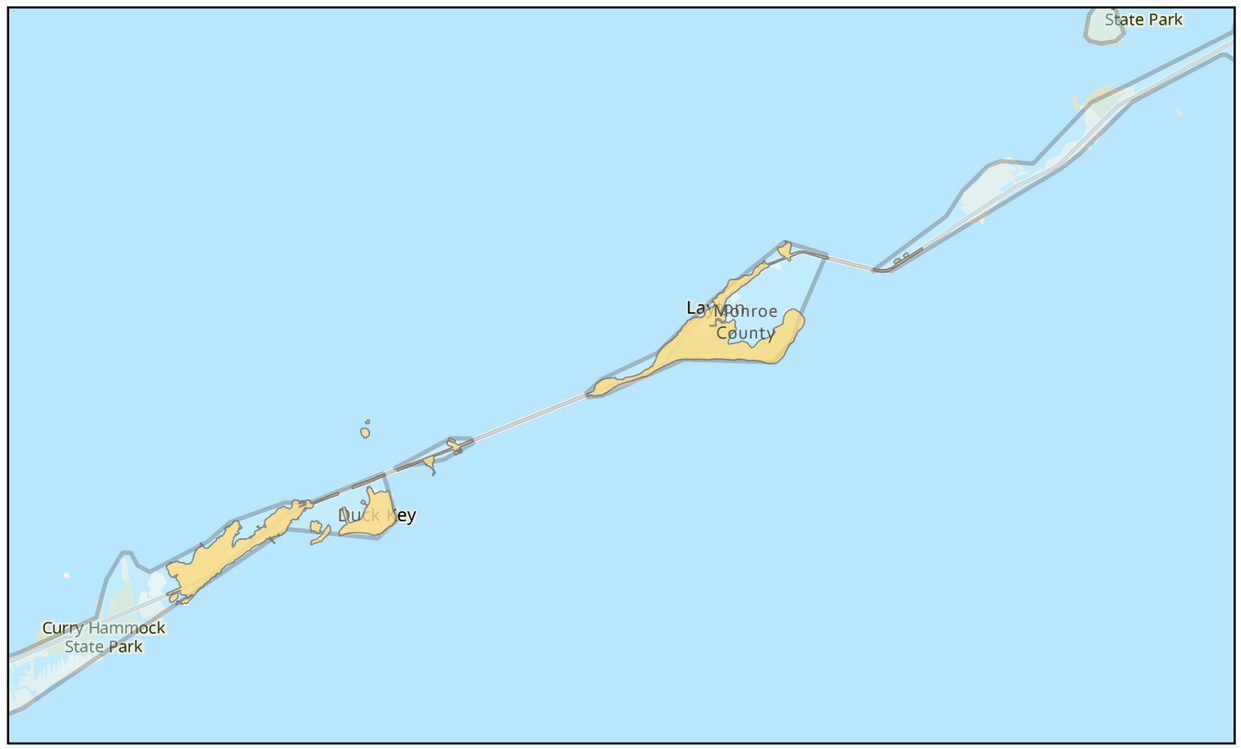
Total Number of LIDAC Criteria Met
- 1 - 2
- 3 - 5
- 6 - 8
- 9 - 11
- 12 - 16

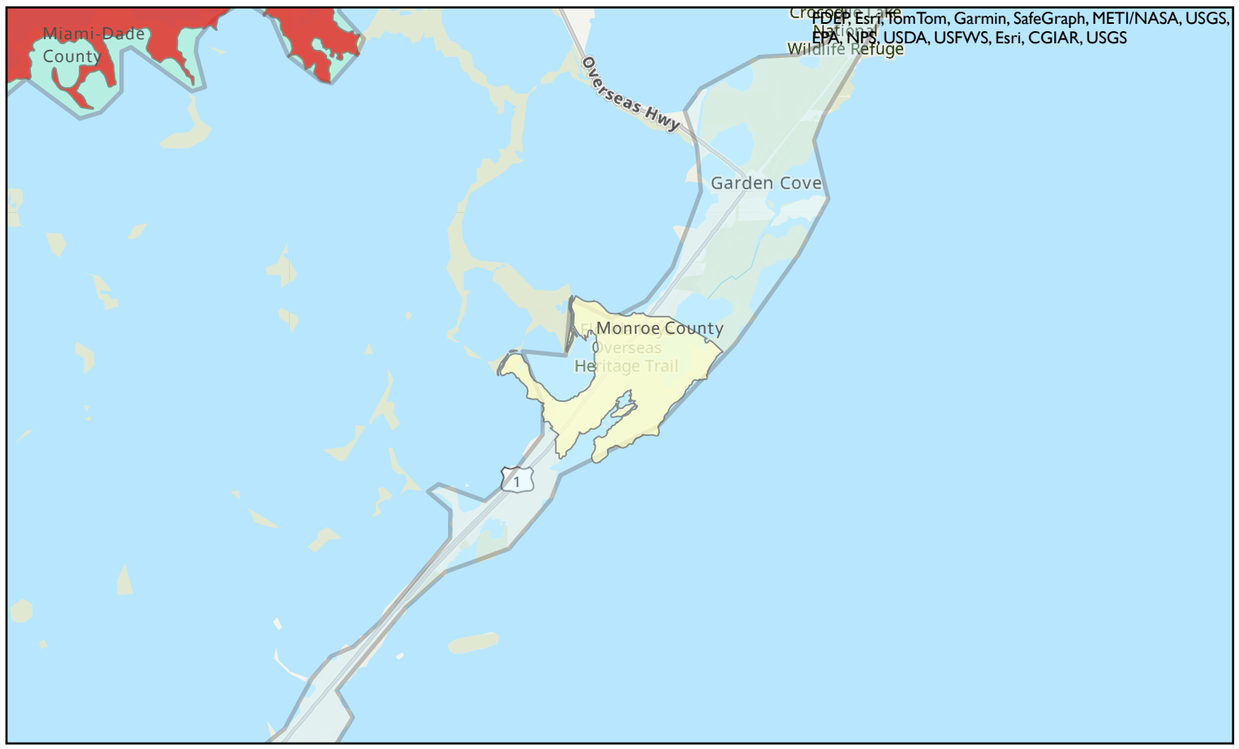


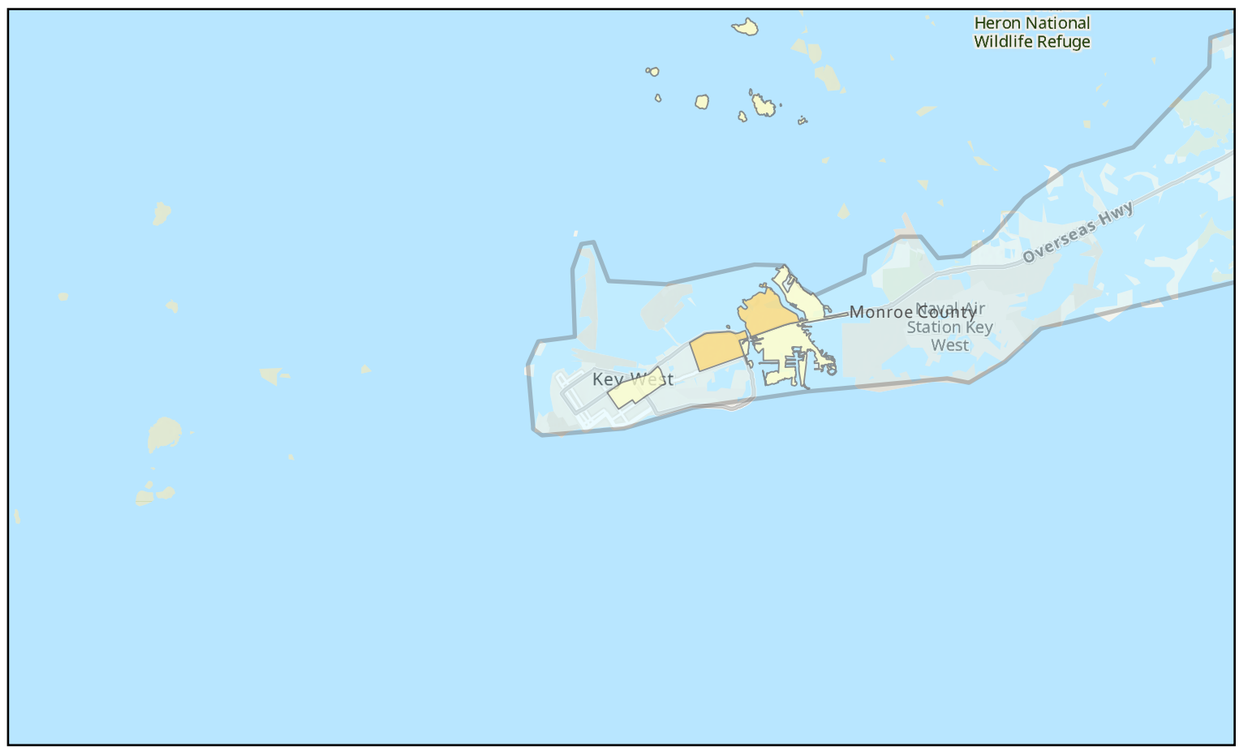
LIDAC Communities in Monroe County, FL

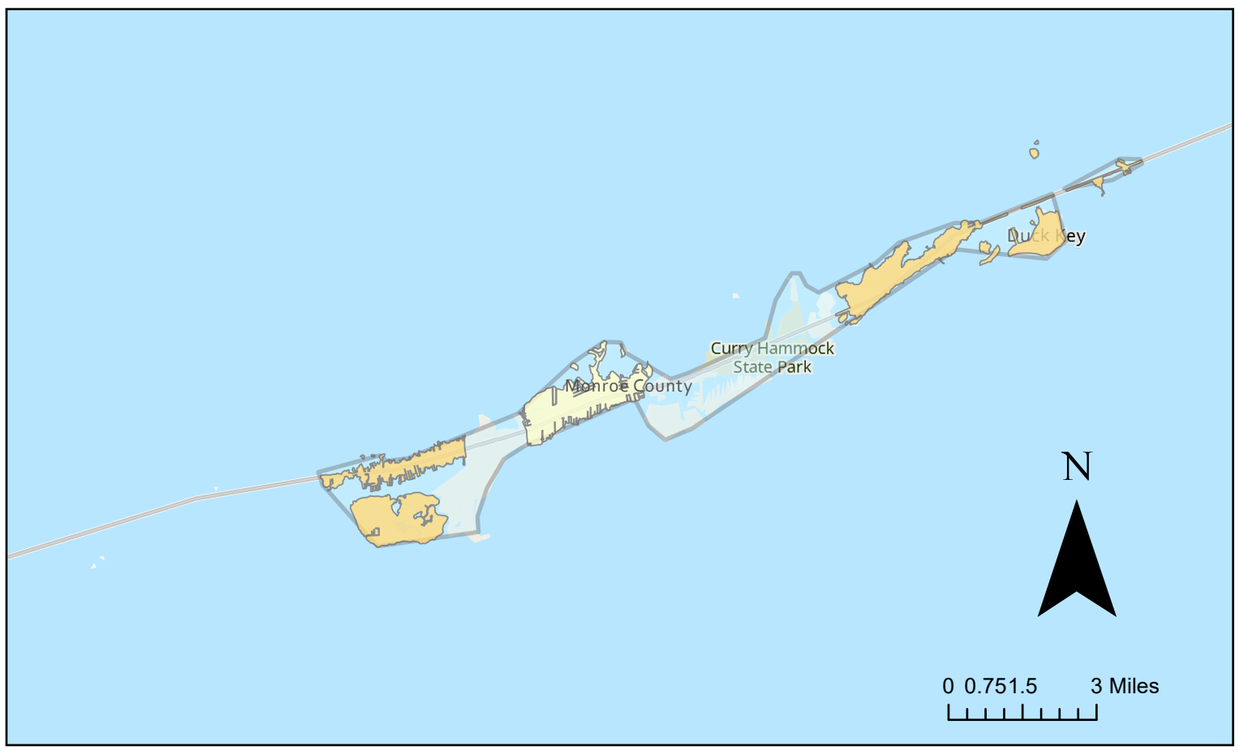
Partial map, 1:200,000

Total Number of LIDAC Criteria Met
- 1 - 2
- 3 - 5
- 6 - 8
- 9 - 11
- 12 - 16



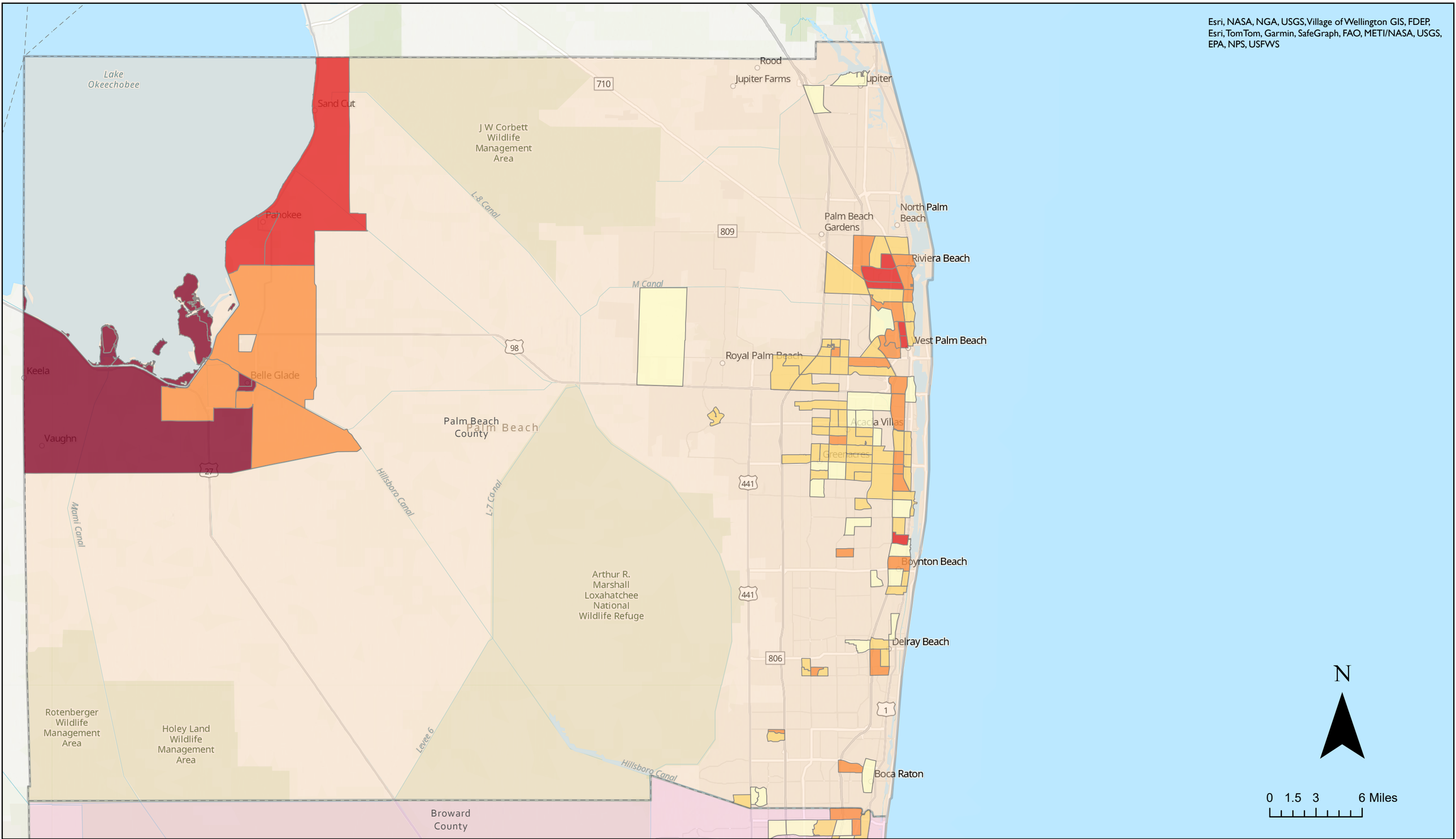




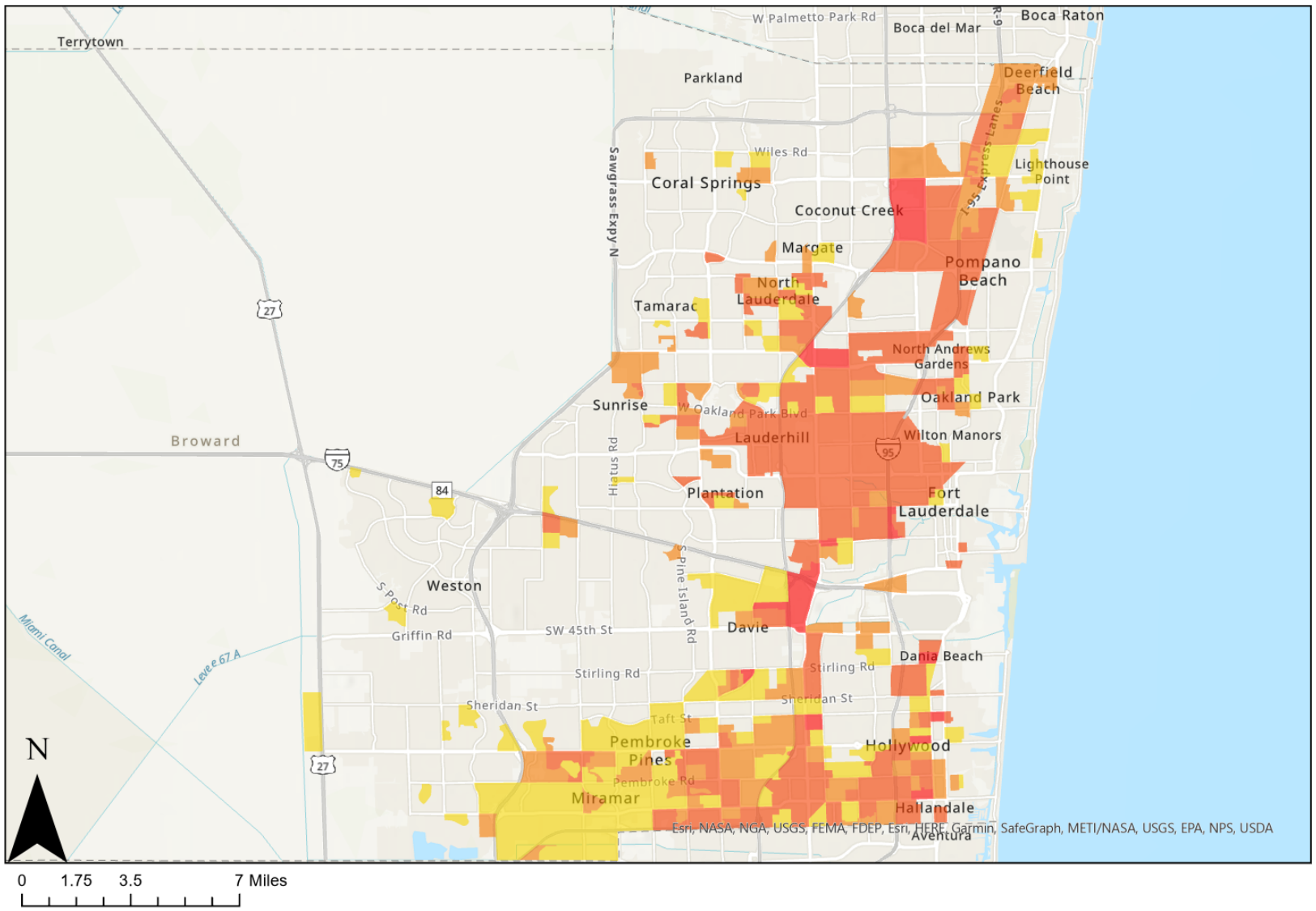


LIDAC Communities in Palm Beach County, FL

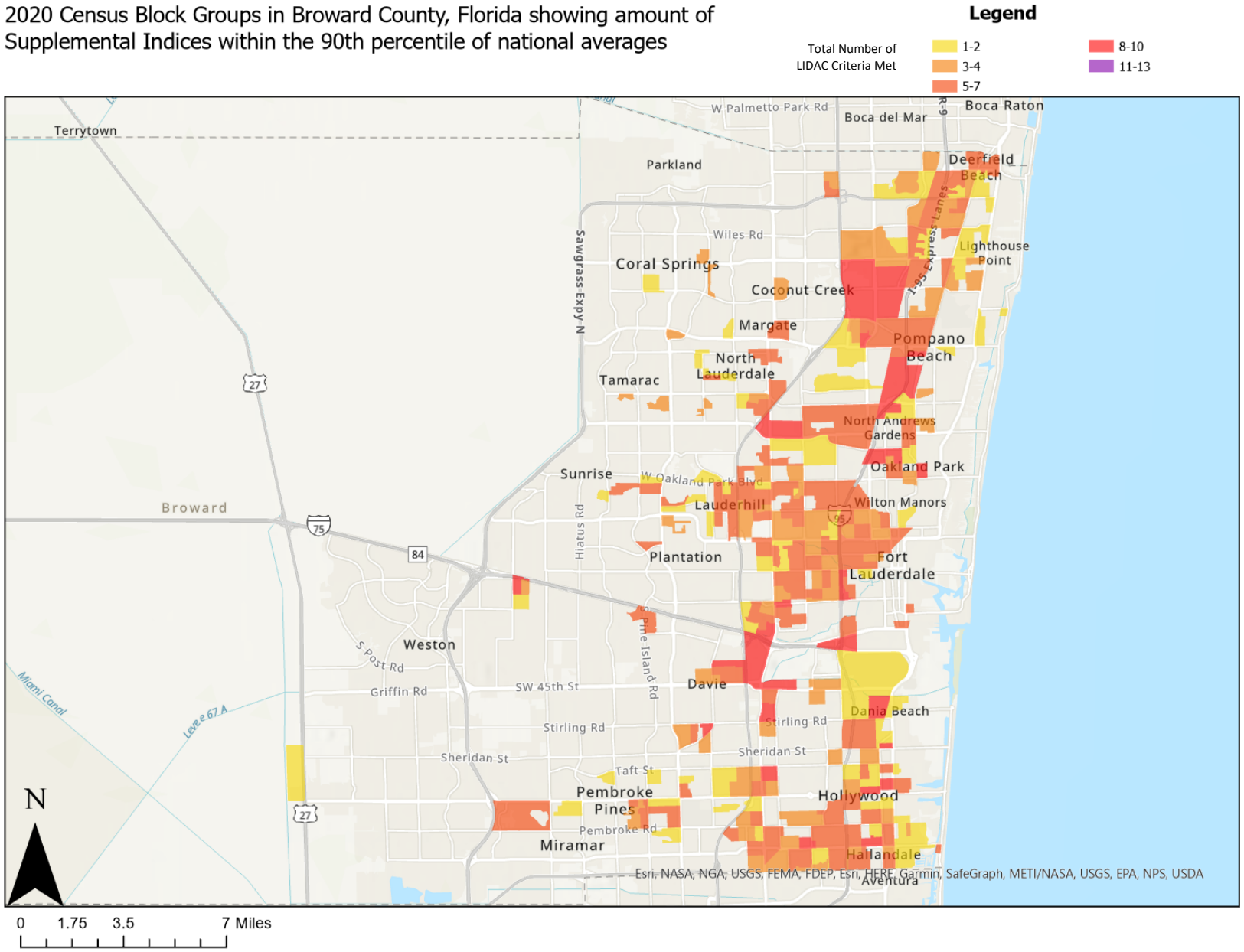
Total Number of LIDAC Criteria Met
- 1 - 2
- 3 - 5
- 6 - 8
- 9 - 11
- 12 - 16



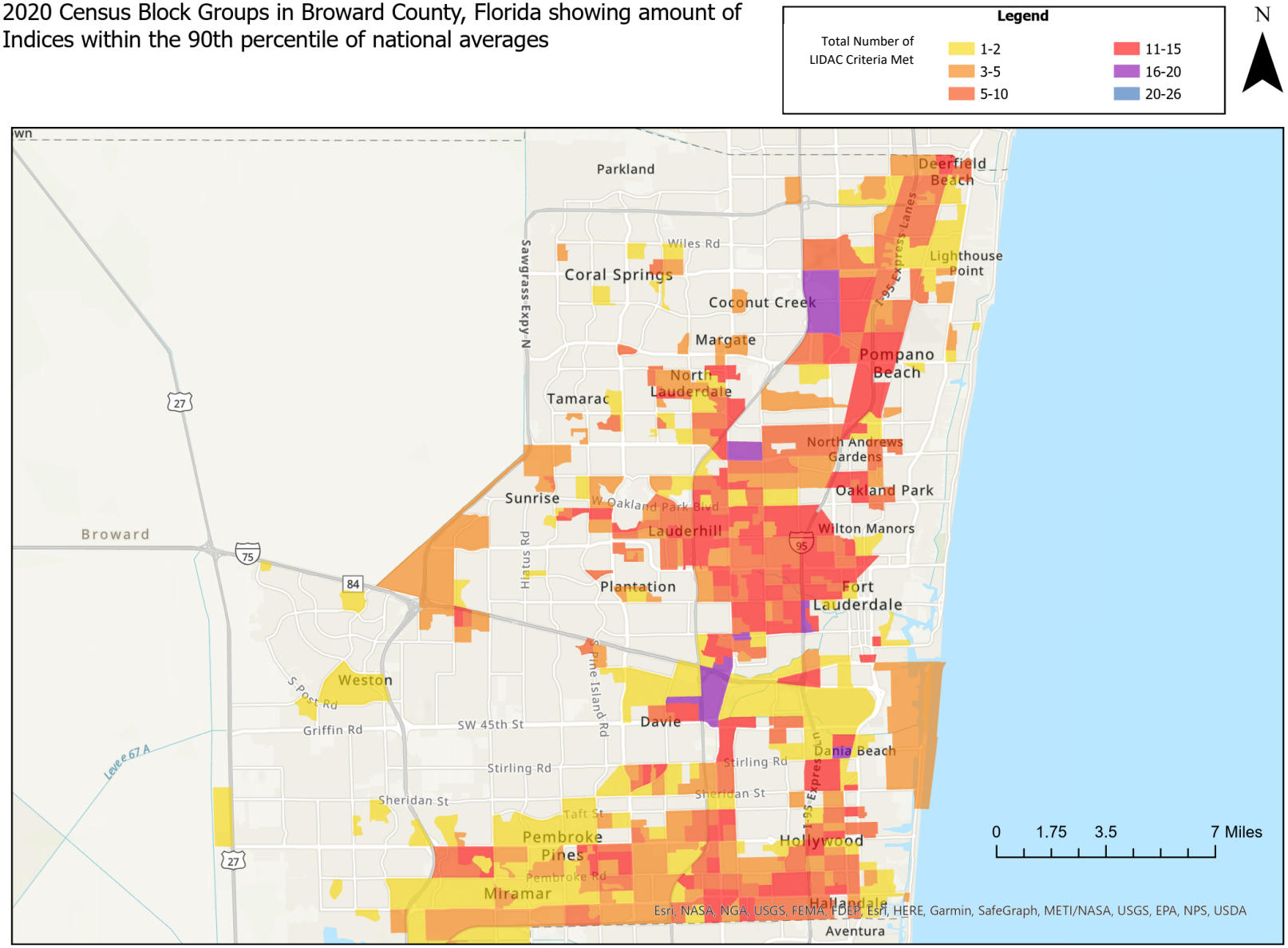
2020 Census Block Groups in Broward County, Florida showing amount of Environmental Justice Indices within the 90th percentile of national averages



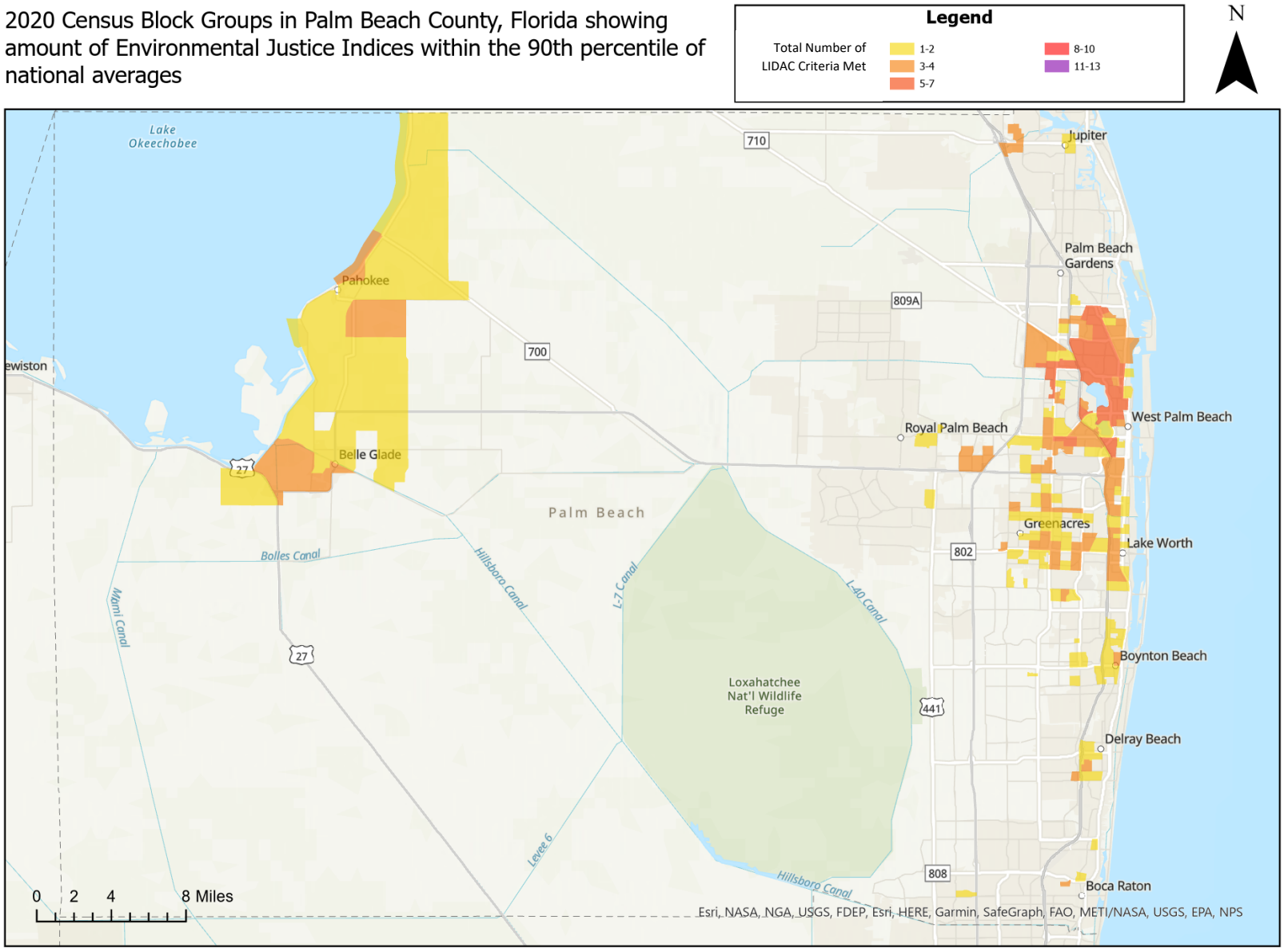
2020 Census Block Groups in Broward County, Florida showing amount of Supplemental Indices within the 90th percentile of national averages



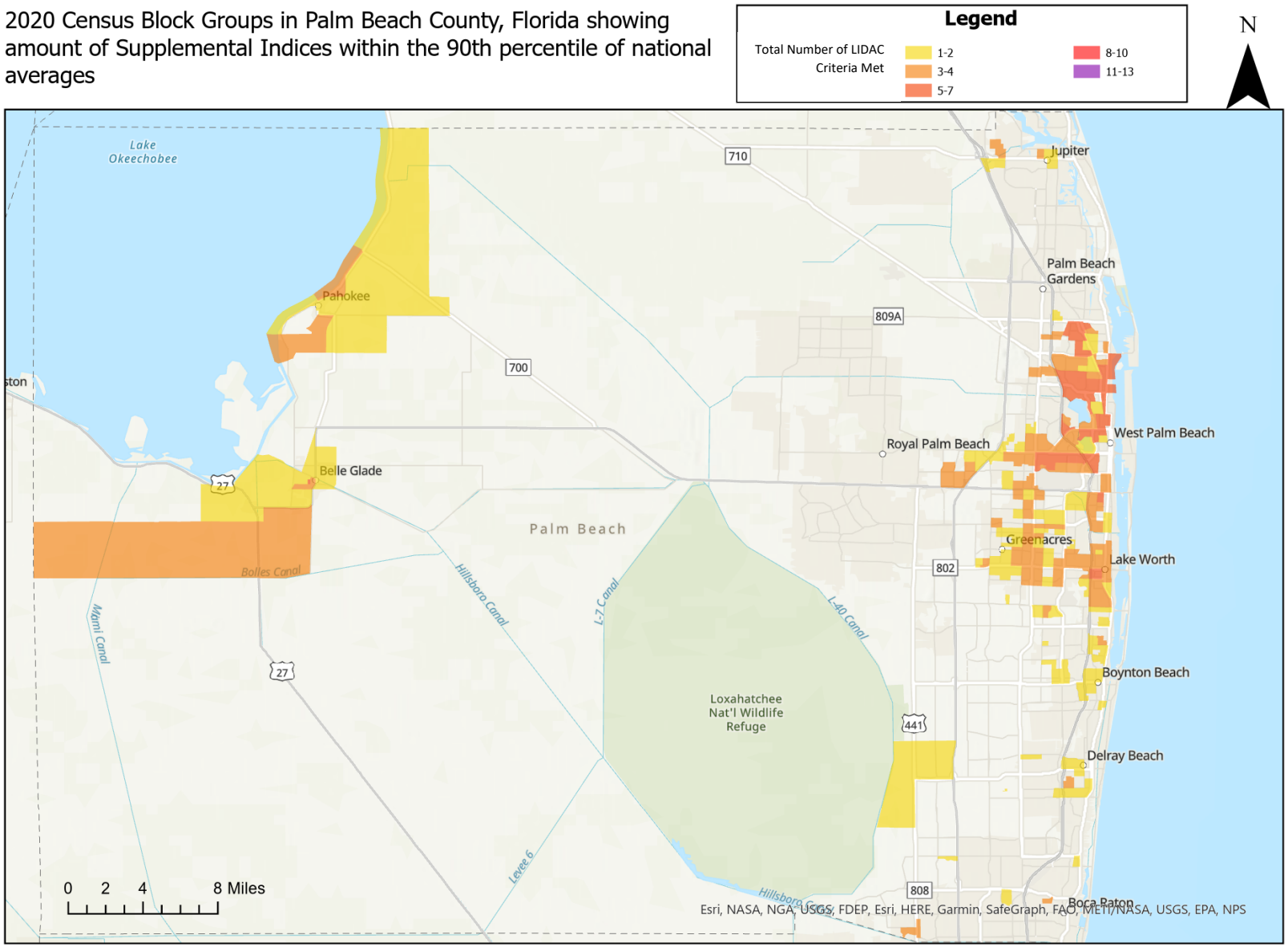
2020 Census Block Groups in Broward County, Florida showing amount of Indices within the 90th percentile of national averages



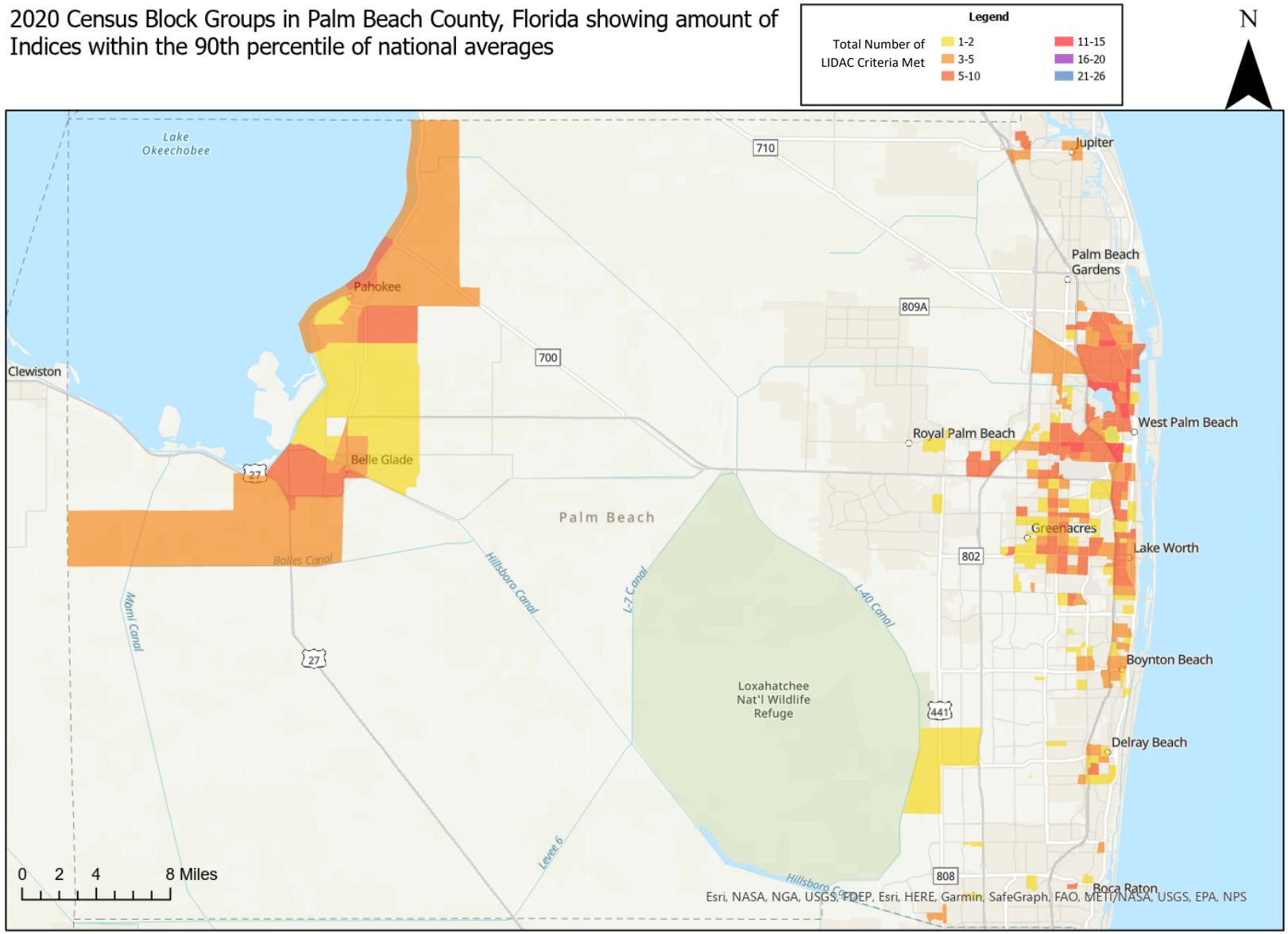
2020 Census Block Groups in Palm Beach County, Florida showing amount of Environmental Justice Indices within the 90th percentile of national averages



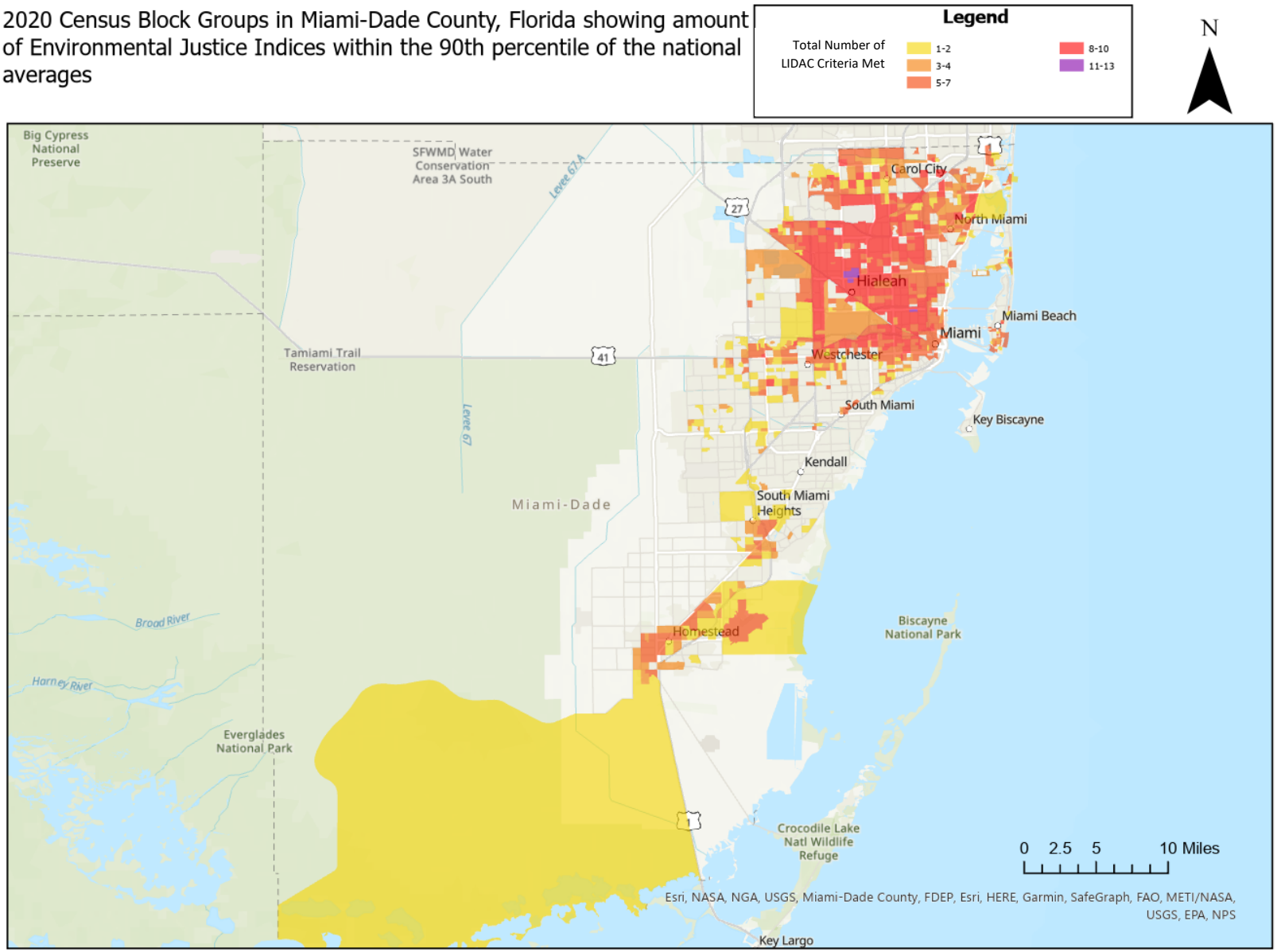
2020 Census Block Groups in Palm Beach County, Florida showing amount of Supplemental Indices within the 90th percentile of national averages



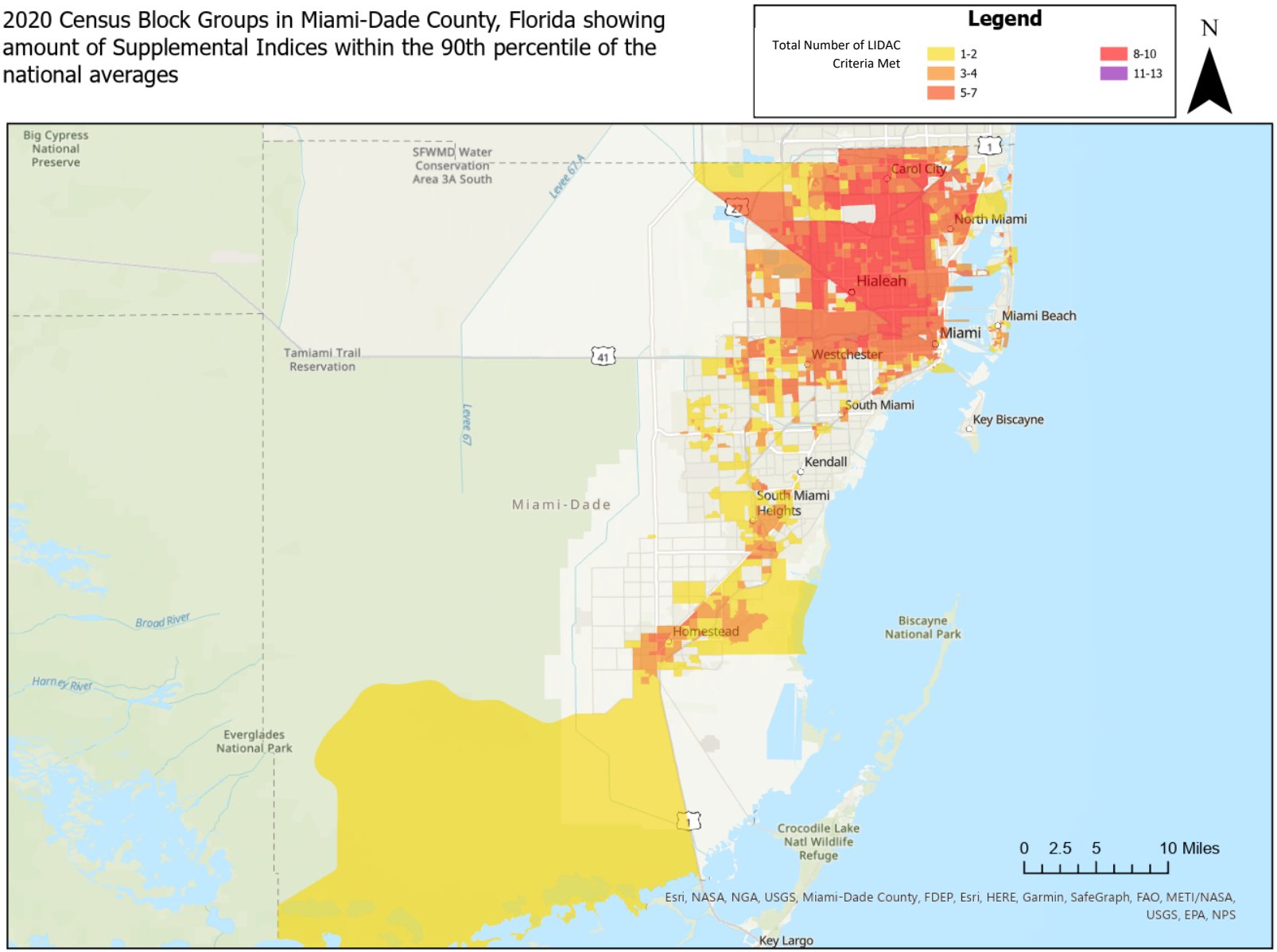
2020 Census Block Groups in Palm Beach County, Florida showing amount of Indices within the 90th percentile of national averages



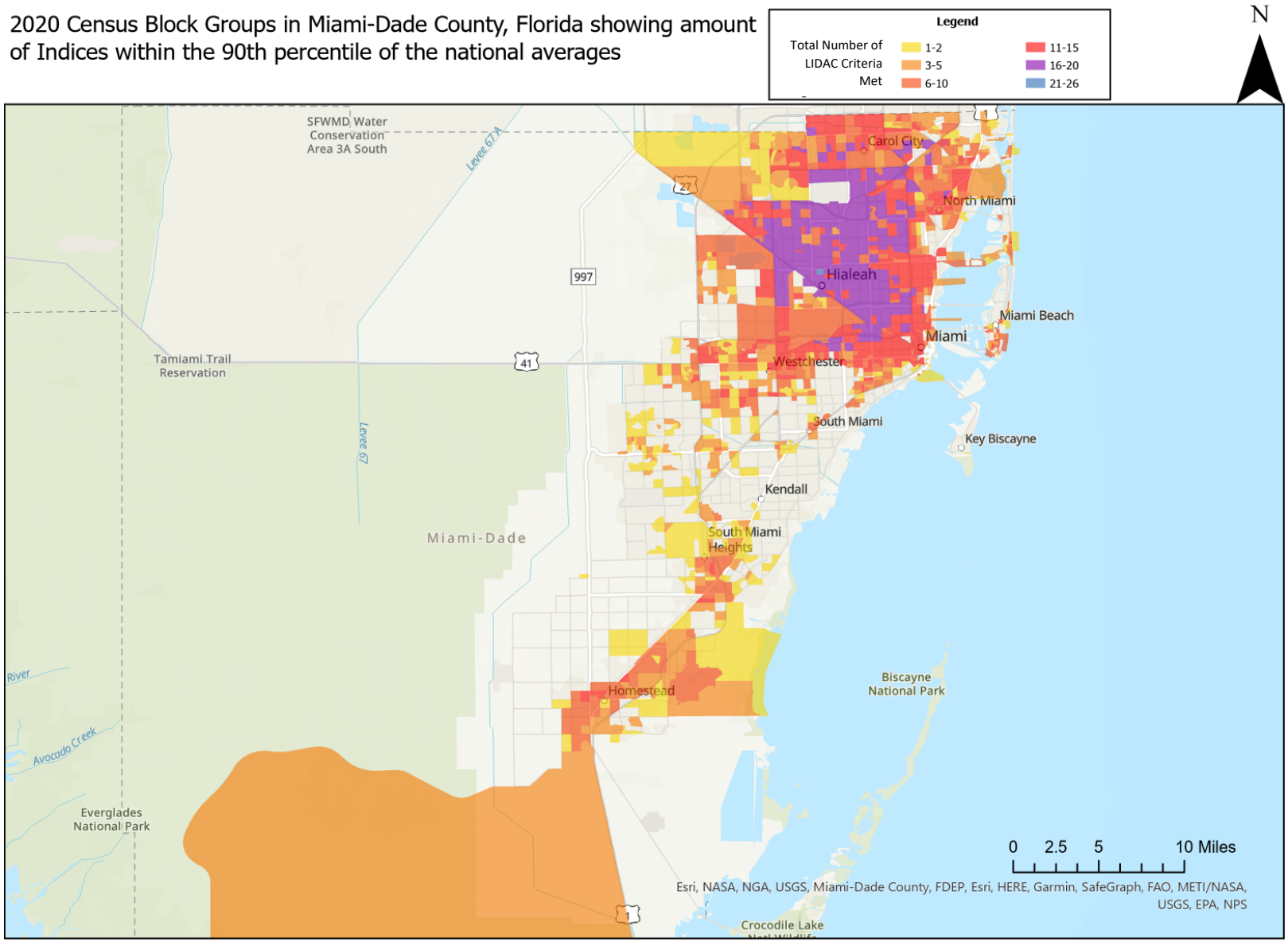
2020 Census Block Groups in Miami-Dade County, Florida showing amount of Environmental Justice Indices within the 90th percentile of the national averages



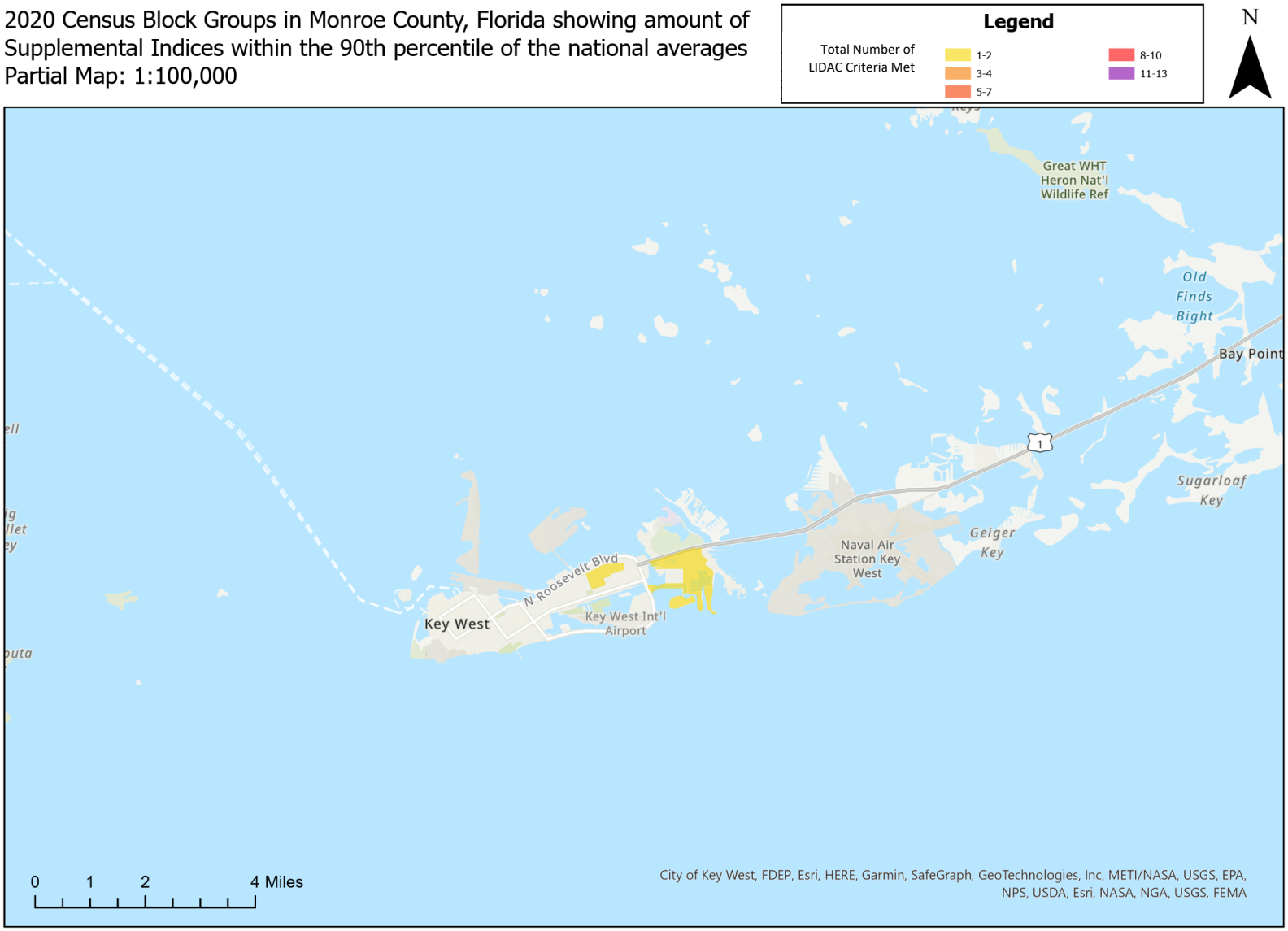
2020 Census Block Groups in Miami-Dade County, Florida showing amount of Supplemental Indices within the 90th percentile of the national averages



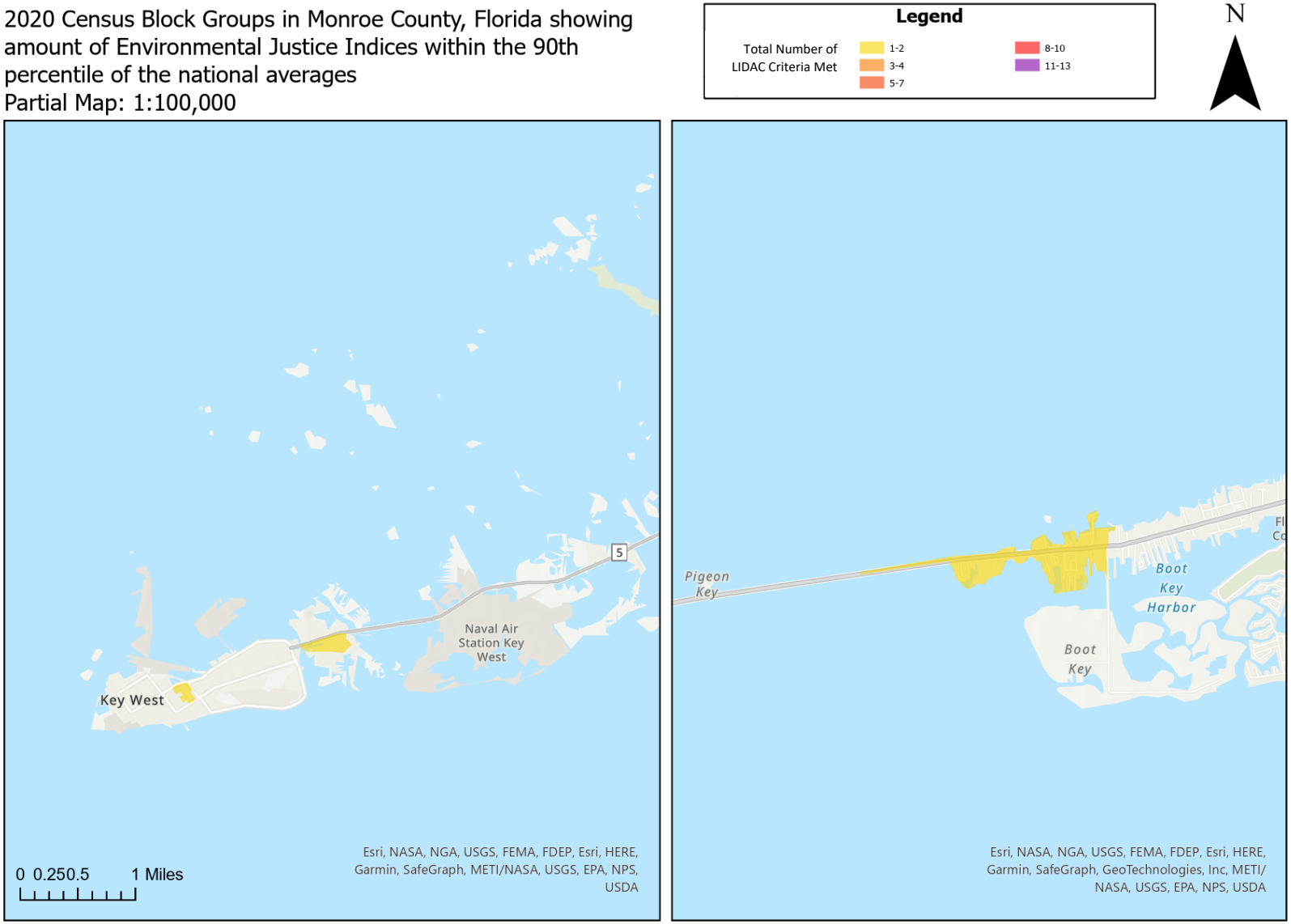
2020 Census Block Groups in Miami-Dade County, Florida showing amount of Indices within the 90th percentile of the national averages



2020 Census Block Groups in Monroe County, Florida showing amount of Supplemental Indices within the 90th percentile of the national averages
Partial Map: 1:100,000

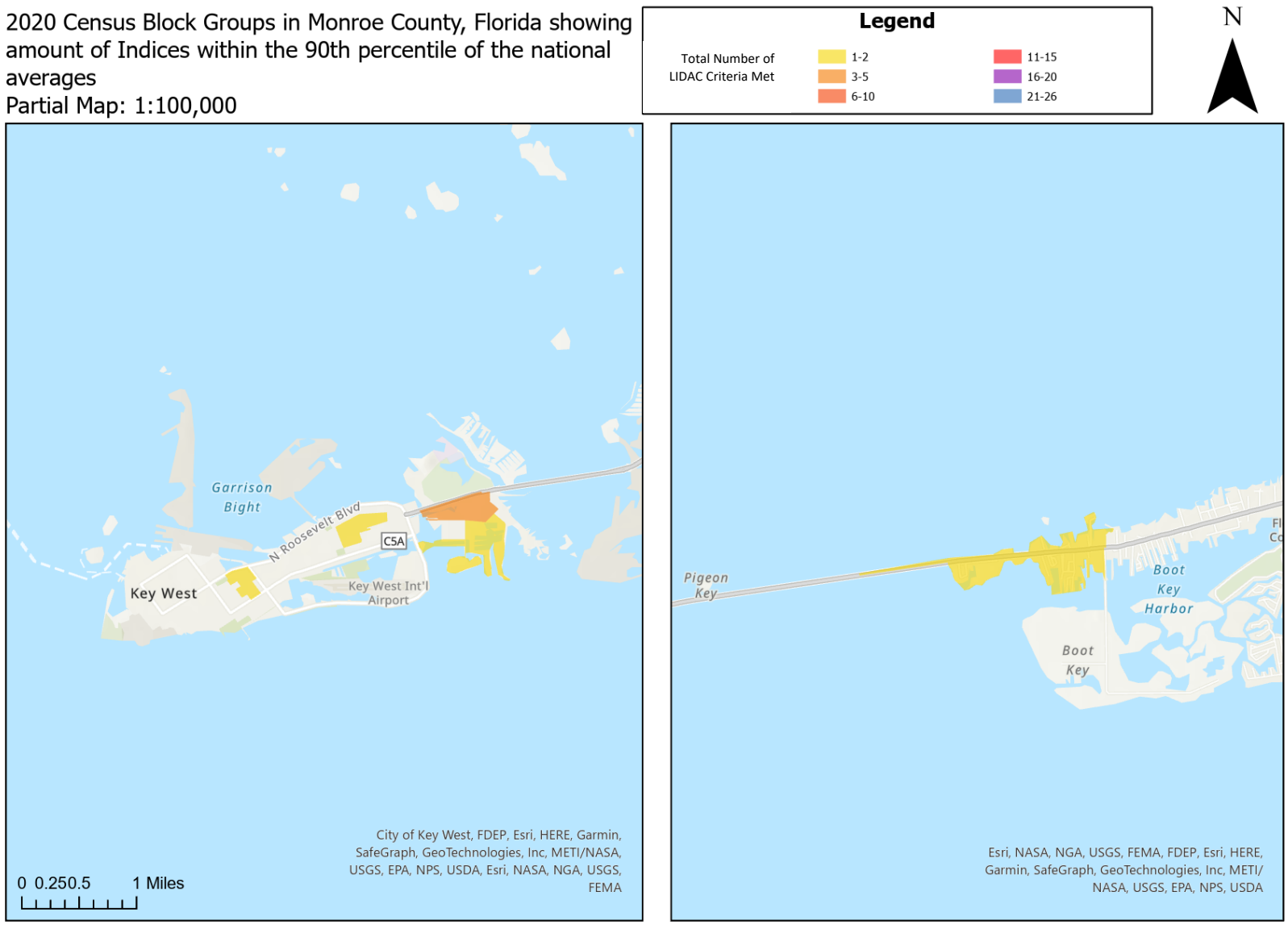


2020 Census Block Groups in Monroe County, Florida showing amount of Environmental Justice Indices within the 90th percentile of the national averages
Partial Map: 1:100,000



2020 Census Block Groups in Monroe County, Florida showing amount of Indices within the 90th percentile of the national averages

Partial Map: 1:100,000



Appendix 4

Low Income/Disadvantaged Communities Survey Results

LIDACs Survey Findings - Broward County Priorities and Benefit

Transportation

The top three transportation priorities reported individuals in Broward County were (Figure 3):

- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk or go to: 40%
- Safe and accessible bike routes: 34%
- More efficient bus options (faster, more reliable, improved routes): 33%

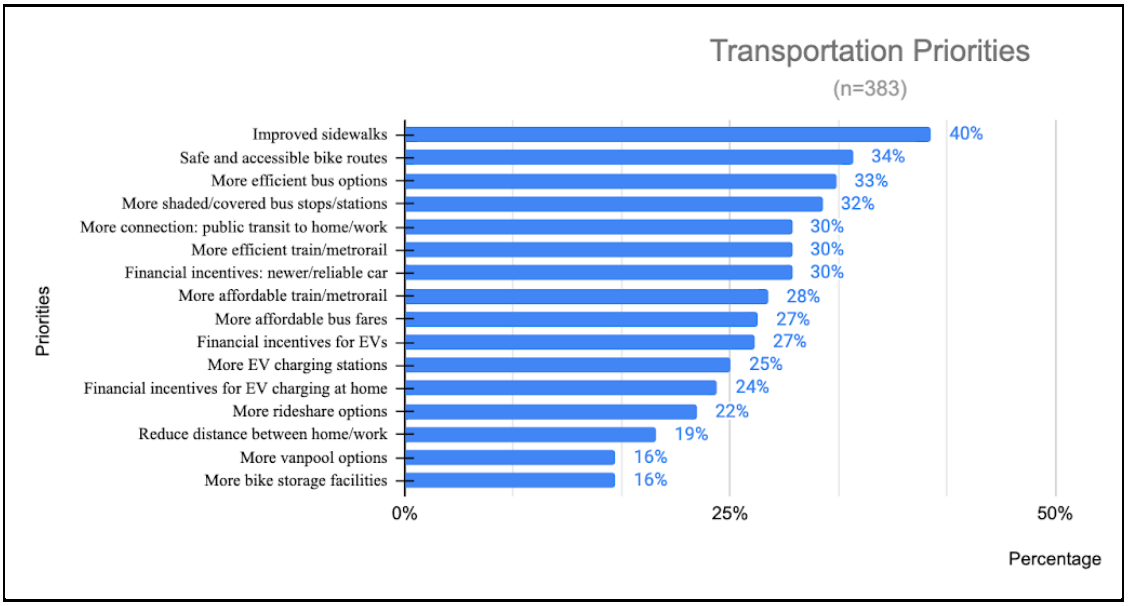


Figure 3

The top three most important benefits related to transportation reported by individuals in Broward County (Figure 4):

- Protecting the environment, including water sources, biodiversity: 61%
- Reducing greenhouse gas emission that warm the planet: 58%
- Improving heath (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy)

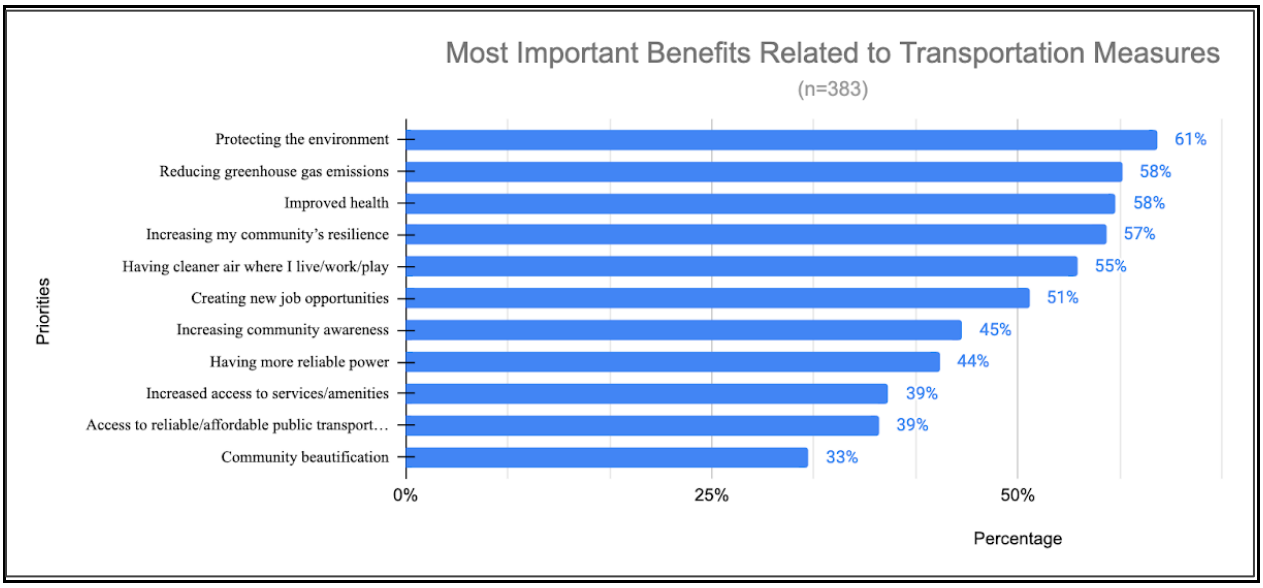


Figure 4

The top transportation priorities for organizations serving Broward County were (Figure 5):

- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk or go to: 63%
- These were equally and highly important:
    - Safe and accessible bike routes: 50%
    - More efficient train/metrorail (faster, more reliable, improved routes, etc): 50%
    - More shaded and/or covered bus stops/stations to increase residents of the community to use public transit: 50%

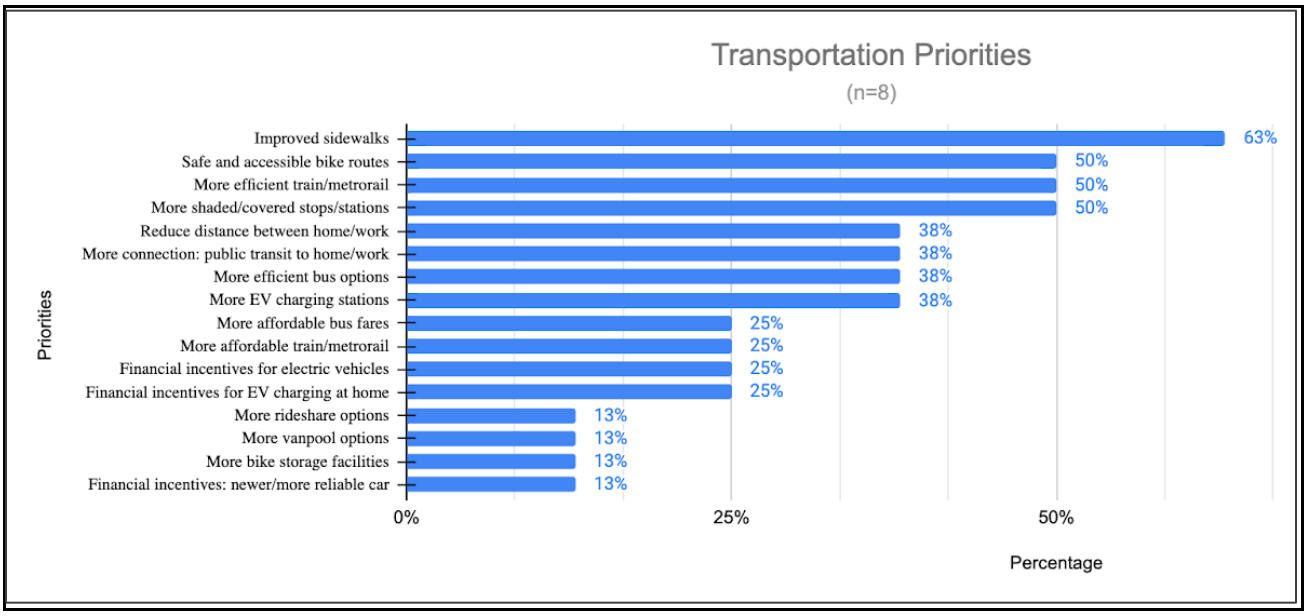


Figure 5

The top three most important benefits related to transportation reported by organizations in Broward County (Figure 6):

- Increasing community awareness of strategies for reducing greenhouse gases: 88%
- Reducing greenhouse gas emissions that warm the planet: 88%
- Increasing community's resilience to storms, heat, and flooding: 75%

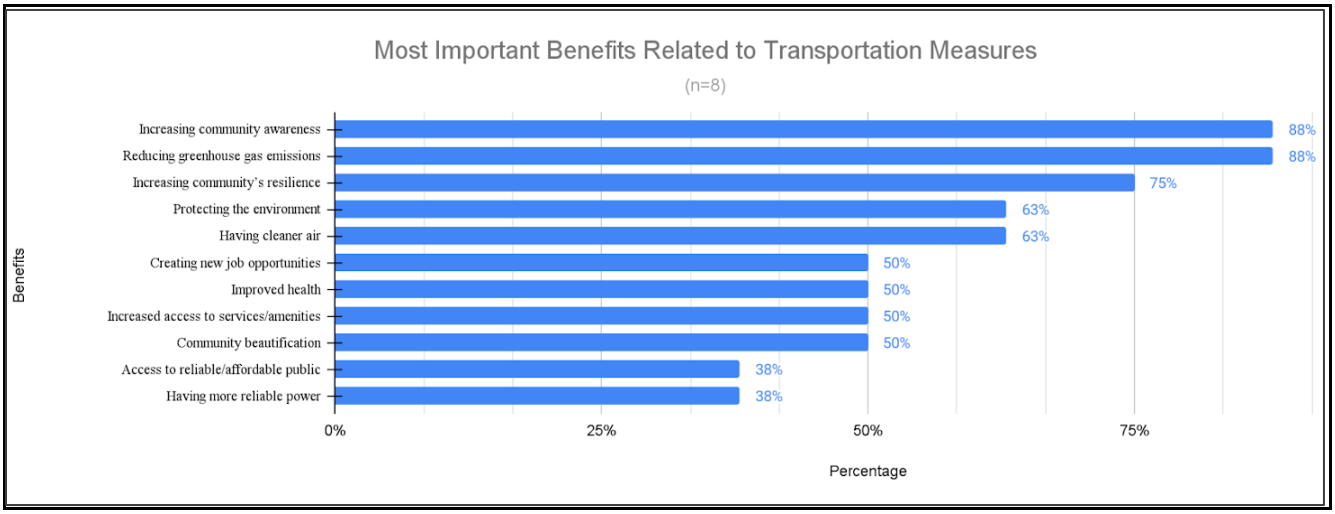


Figure 6

Housing

The top three housing priorities reported individuals in Broward County were (Figure 7):

- Financial incentives to improve housing conditions: 48%
- Financial incentives to support upgrading appliances, electronics, lighting: 43%
- Financial incentives to upgrade air conditioning unit to a more efficient model: 43%

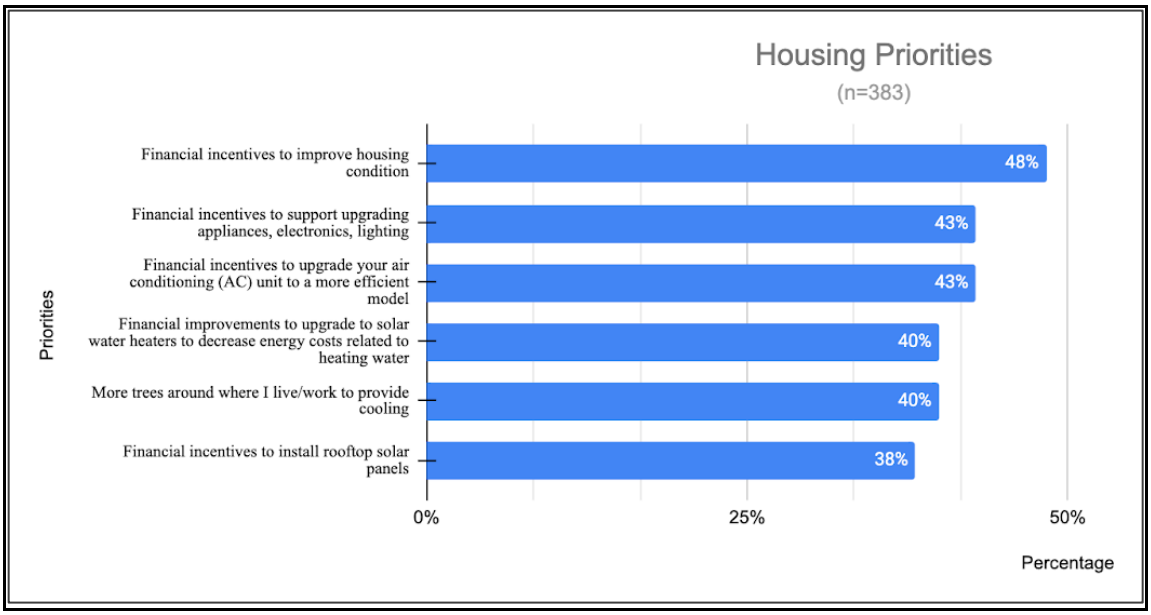


Figure 7

The top three most important benefits related to housing reported by individuals in Broward County (Figure 8):

- Lowering energy costs/utility bills: 65%
- Protecting the environment, including water sources, biodiversity: 62%
- These were equally and highly important:
    - Increasing community's resilience to storms, heat and flooding: 60%
    - Improving heath (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy): 60%

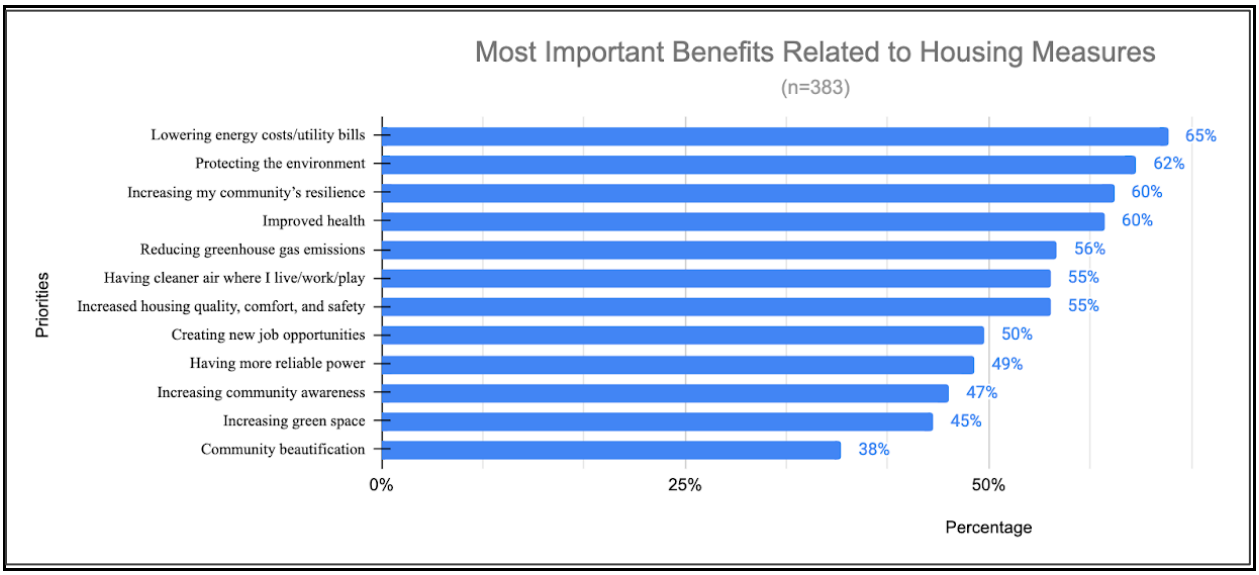


Figure 8

The top three housing priorities for organizations serving Broward County were (Figure 9):

- More trees around where community residents live/work to provide cooling: 88%
- Financial incentives to install rooftop solar panels: 63%
- Financial incentives to upgrade solar water heaters to decrease energy costs related to heating: 50%

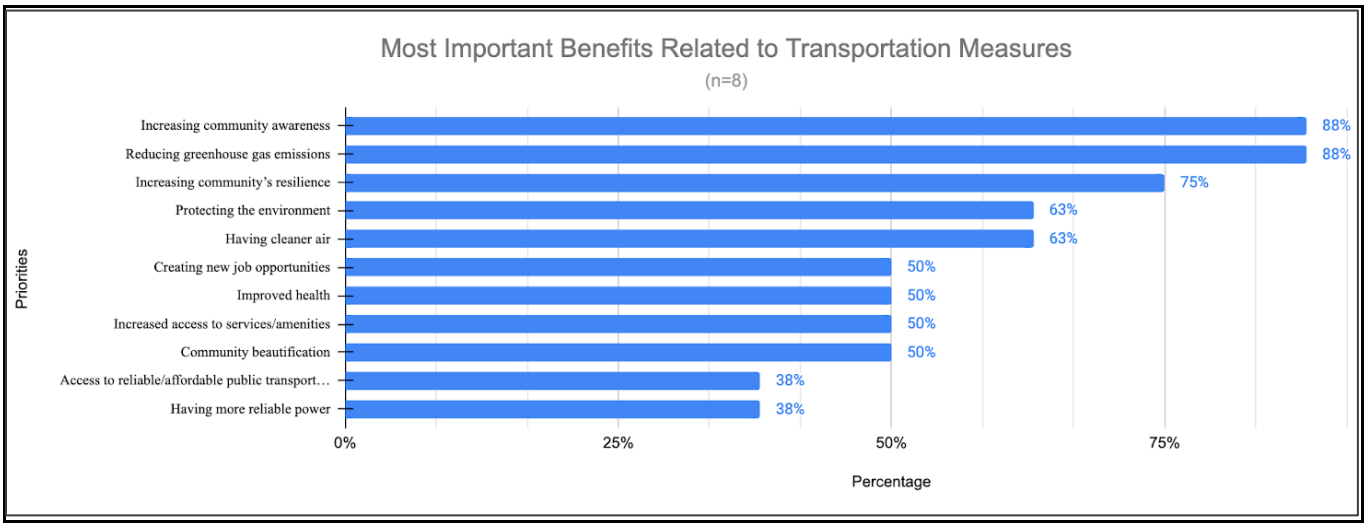


Figure 9

The top three most important benefits related to housing reported by organizations in Broward County (Figure 10):

- Increasing community's resilience to storms, heat, and flooding: 75%
- These were equally and highly important:
    - Protecting the environment, including water sources, biodiversity: 63%
    - Increasing green space: 63%
    - Reducing greenhouse gas emissions that warm the planet: 63%

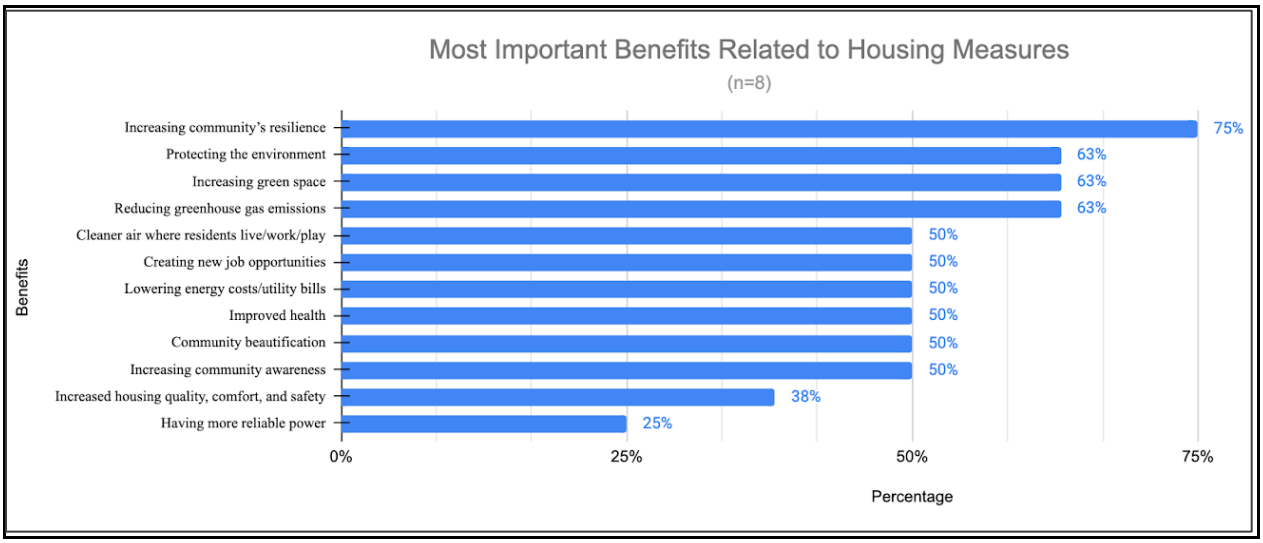


Figure 10

Other Services

The top three priorities in other important areas reported by individuals in Broward County were (Figure 11):

- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 57%
- Improvements to make agriculture more sustainable: 51%
- Increasing the amount of green spaces and natural areas: 48%

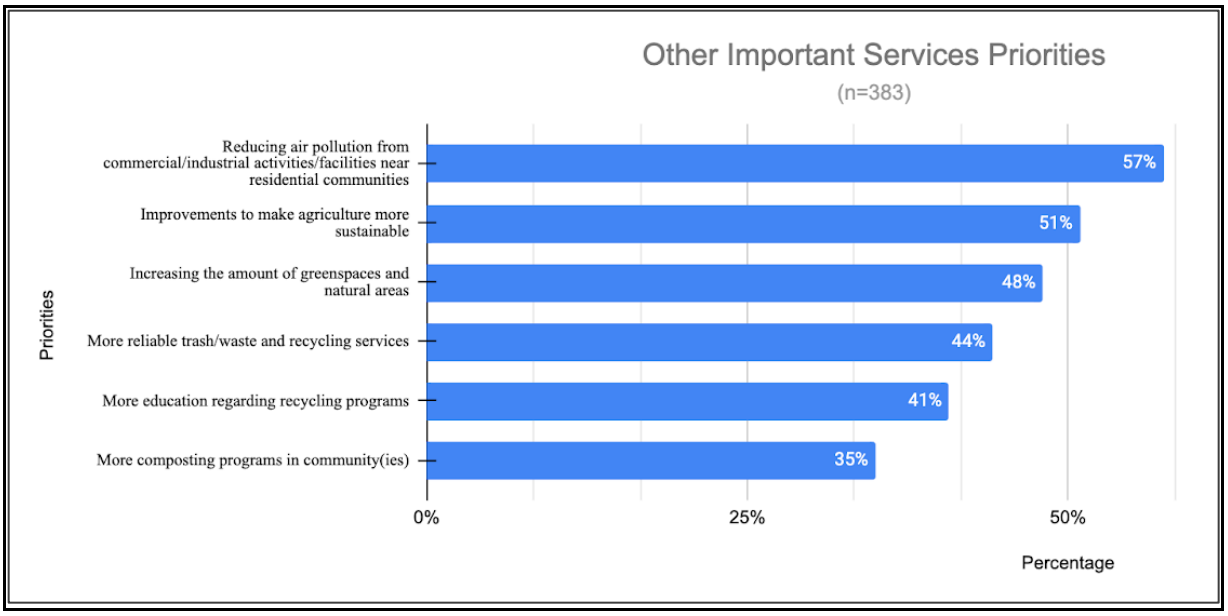


Figure 11

The top three most important benefits related to other important areas reported by individuals in Broward County (Figure 12):

- Protecting the environment, including water sources, biodiversity: 64%
- Lowering energy costs/utility bills: 64%
- Increasing community's resilience to storms, heat, and flooding: 60%

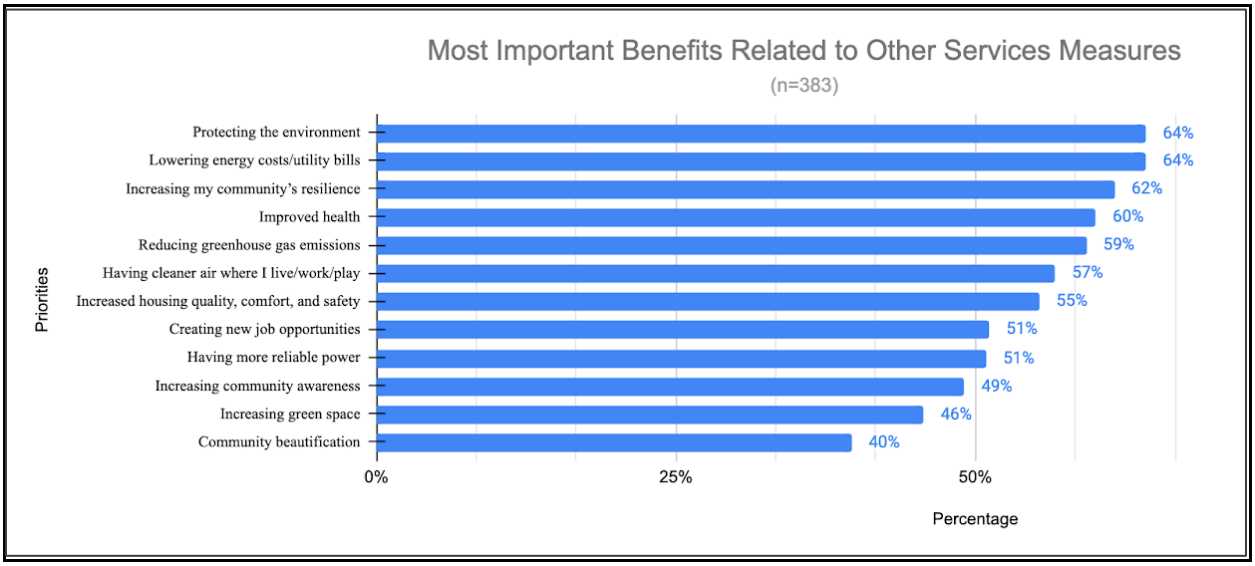


Figure 12

The top three priorities in other important areas reported by organizations in Broward County were (Figure 13):

- More education regarding recycling programs: 63%
- More composting programs in communities: 63%
- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 63%

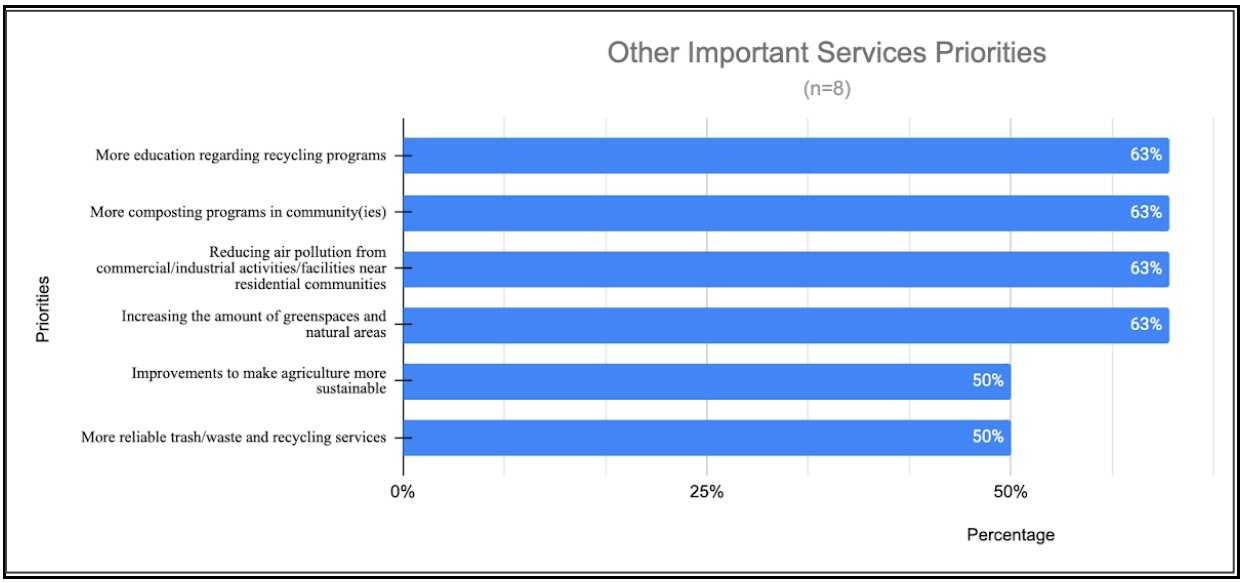


Figure 13

The top three most important benefits related to other areas reported by organizations in Broward County (Figure 14):

- Increasing community resilience to storms, heat, and flooding: 75%
- These were equally and highly important:
    - Having cleaner air where community residents live/work/play: 63%
    - Creating new job opportunities: 63%
    - Reducing greenhouse gas emissions that warm the planet: 63%
    - Protecting the environment, including water sources, biodiversity: 63%
    - Increasing green space: 63%

Increasing community awareness of strategies for reducing greenhouse gases: 63%

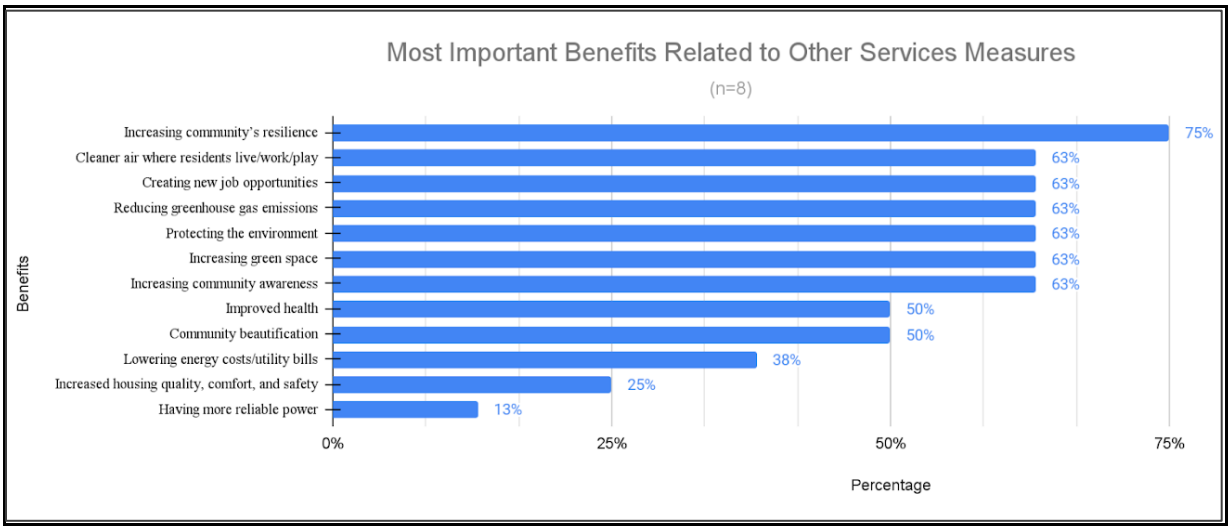

Most Important Benefits Related to Other Services Measures
(n=8)
Benefits
Increasing community's resilience
Cleaner air where residents live/work/play
Creating new job opportunities
Reducing greenhouse gas emissions
Protecting the environment
Increasing green space
Increasing community awareness
Improved health
Community beautification
Lowering energy costs/utility bills
Increased housing quality, comfort, and safety
Having more reliable power
75%
63%
63%
63%
63%
63%
63%
50%
50%
38%
25%
13%
0%
25%
50%
75%
Percentage

Figure 14

LIDACs Survey Findings - Miami-Dade County Priorities and Benefit

Transportation

The top three transportation priorities reported individuals in Miami-Dade County were (Figure 15):

- More efficient train/metrorail: 47%
- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk or go to: 47%
- Safe and accessible bike routes: 43%

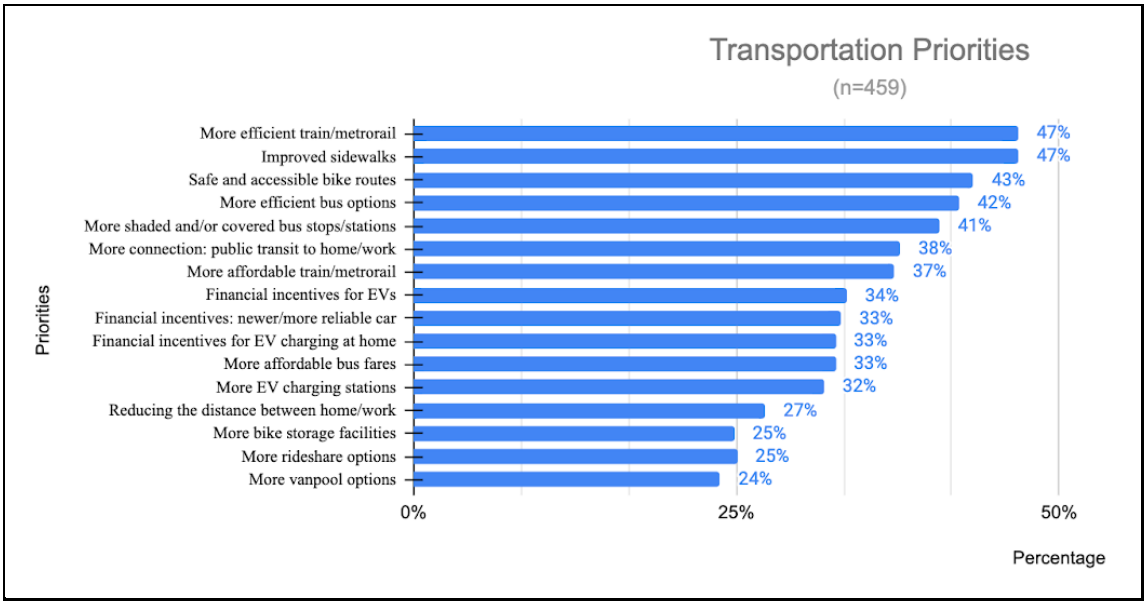


Figure 15

The top three most important benefits related to transportation reported by individuals in Miami-Dade County (Figure 16):

- Protecting the environment, including water sources, biodiversity: 66%
- Reducing greenhouse gas emission that warm the planet: 62%
- Improving heath (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy): 61%

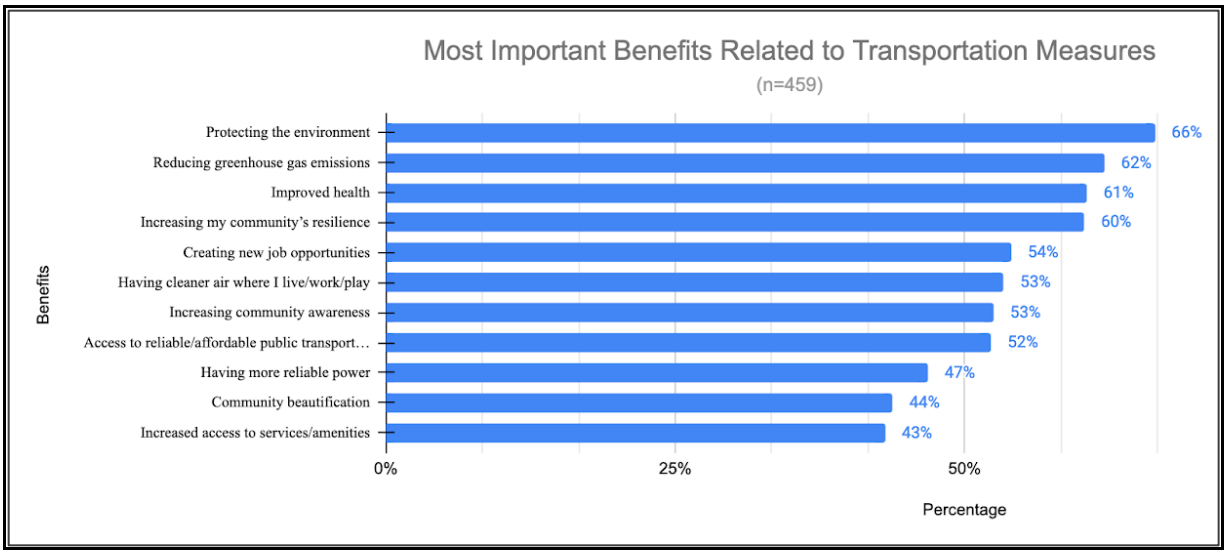


Figure 16

The top transportation priorities for organizations serving Miami-Dade County were (Figure 17):

- Financial incentives for electric vehicles: 79%
- More connection from public transit to where community residents live and/or work: 64%
- Safe and accessible bike routes: 64%

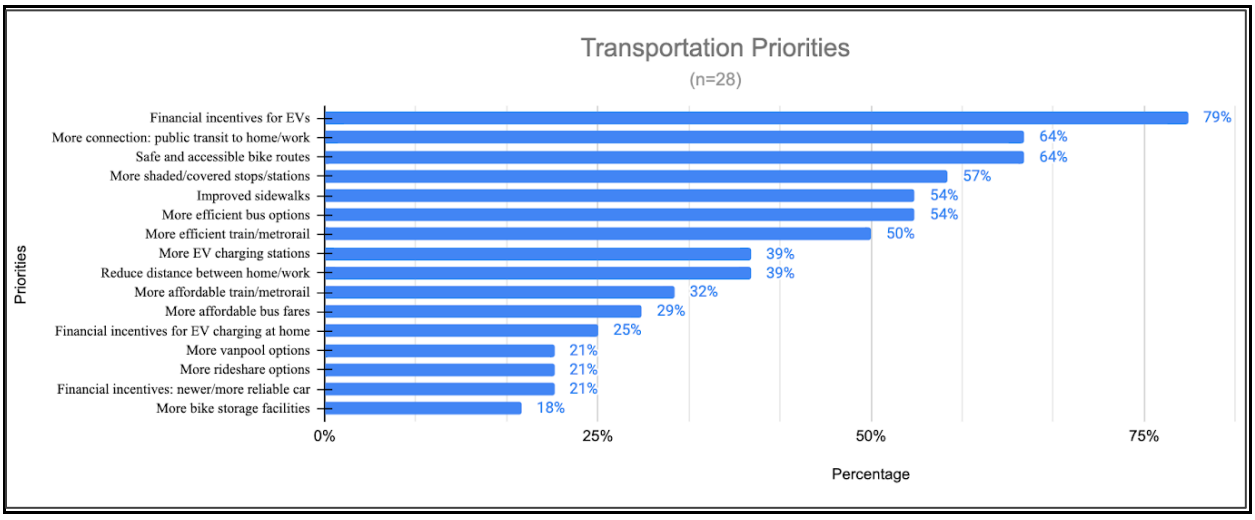


Figure 17

The top three most important benefits related to transportation reported by organizations in Miami-Dade County (Figure 18):

- Reducing greenhouse gas emissions that warm the planet: 93%
- Increasing community's resilience to storms, heat, and flooding: 86%
- Protecting the environment, including water source, biodiversity: 86%

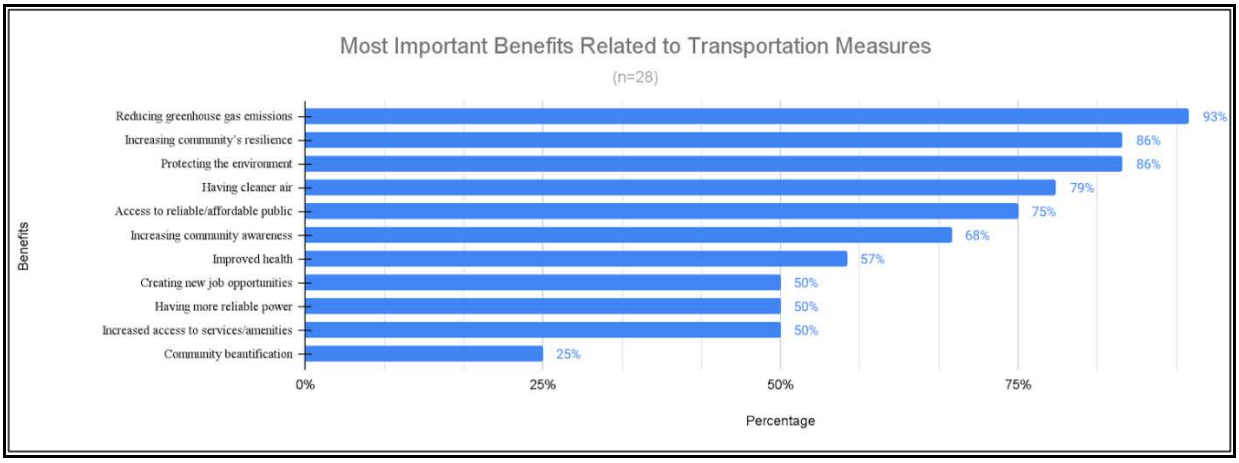


Figure 18

Housing

The top three housing priorities reported individuals in Miami-Dade County were (Figure 19):

- Financial incentives to improve housing conditions: 52%
- More trees around where people live/work to provide cooling: 51%
- These were equally and highly important:
    - Financial incentives to install rooftop solar panels: 49%
    - Financial incentives to upgrade air conditioning unit to a more efficient model: 49%

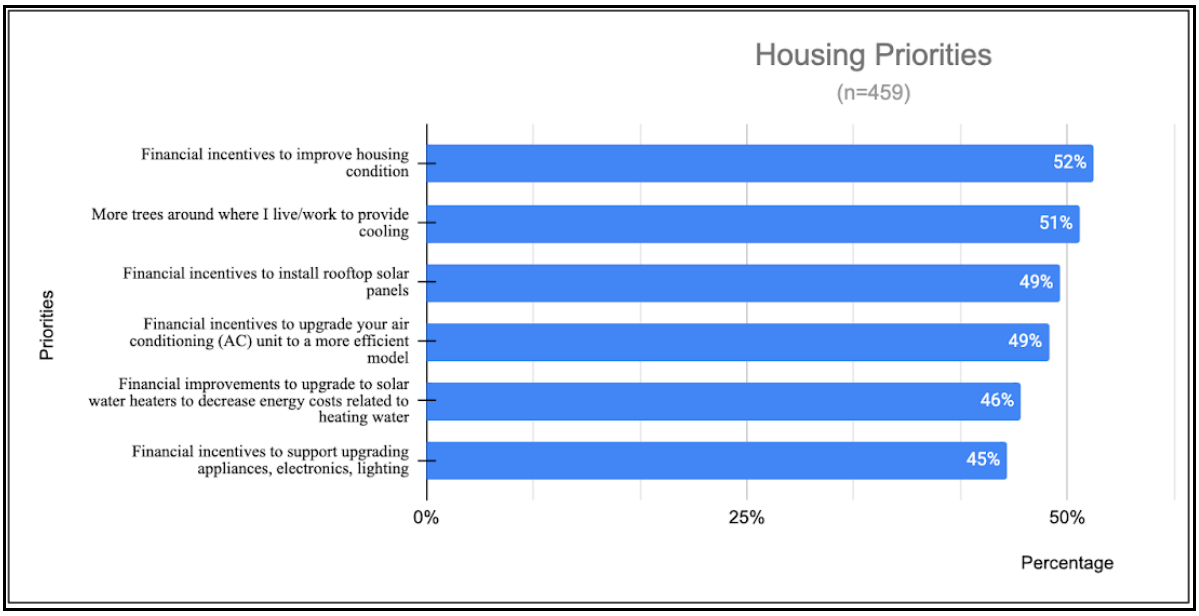


Figure 19

The top three most important benefits related to housing reported by individuals in Miami-Dade County (Figure 20):

- Protecting the environment, including water sources, biodiversity: 71%
- Increasing community's resilience to storms, heat and flooding: 62%
- These were equally and highly important:
    - Lowering energy costs/utility bills: 61%
    - Reducing greenhouse gas emissions that warm the planet: 61%
    - Improving health (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy): 61%

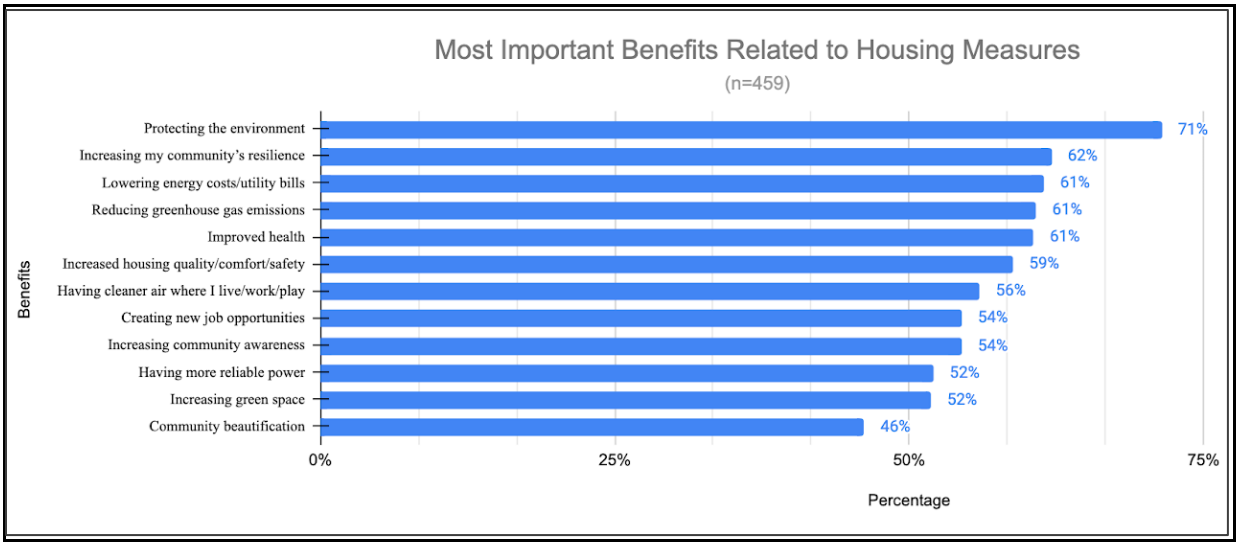


Figure 20

The top three housing priorities for organizations serving Miami-Dade County were (Figure 21):

- Financial incentives to upgrade air conditioning units to a more efficient model: 64%
- Financial incentives to improve housing conditions: 61%
- Financial incentives to install rooftop solar panels: 57%

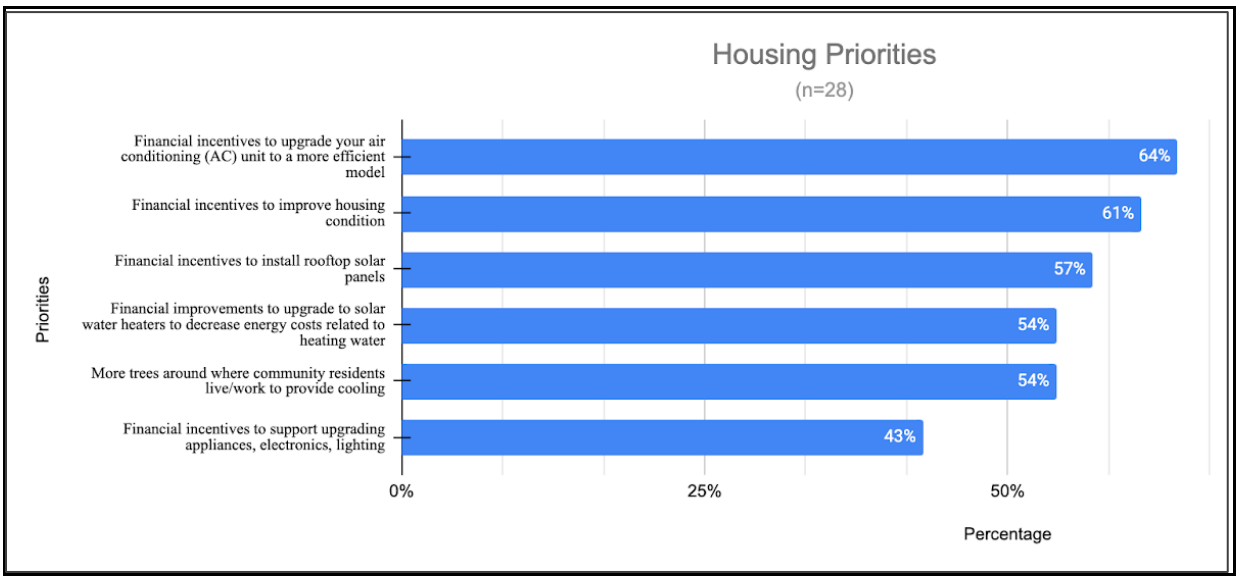


Figure 21

The top three most important benefits related to housing reported by organizations in Miami-Dade County (Figure 22):

- Increasing community's resilience to storms, heat, and flooding: 96%
- Reducing greenhouse gas emissions that warm the planet: 86%
- These were equally and highly important:
    - Having cleaner air where community residents live/work/play: 75%
    - Protecting the environment, including water sources, biodiversity: 75%

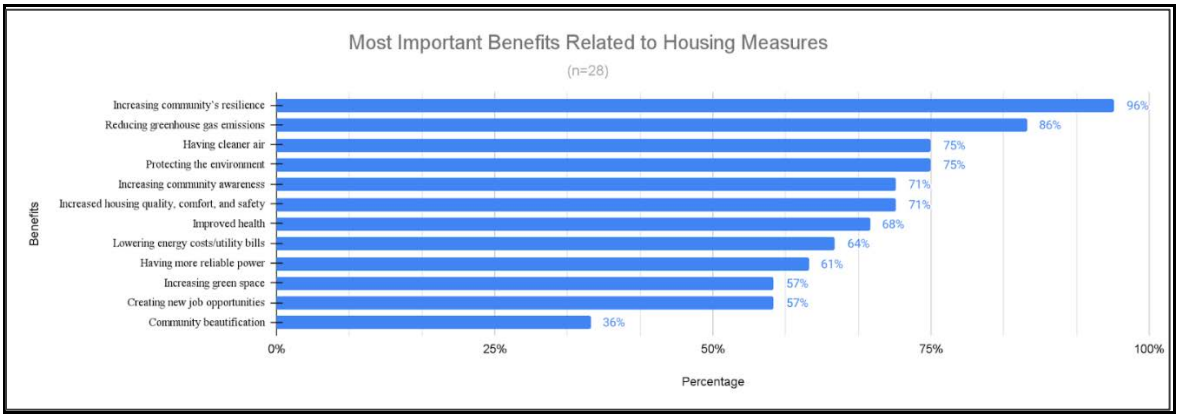


Figure 22

Other Services

The top three priorities in other important areas reported by individuals in Miami-Dade County were (Figure 23):

- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 62%
- Increasing the amount of green spaces and natural areas: 55%
- Improvements to make agriculture more sustainable: 55%

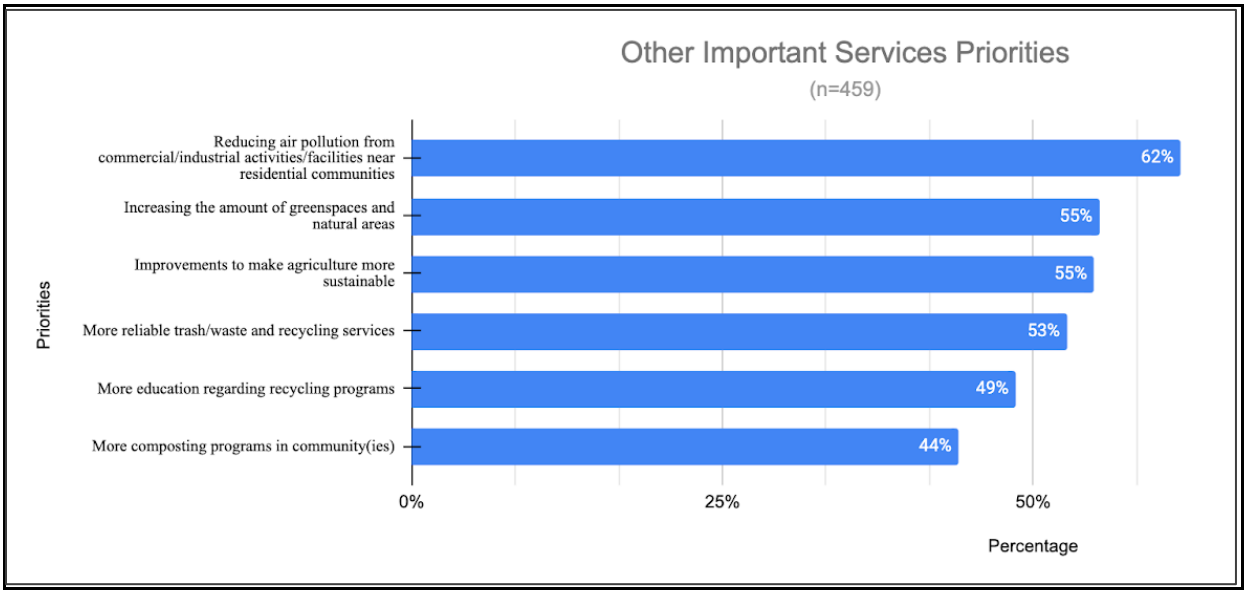


Figure 23

The top three most important benefits related to other important areas reported by individuals in Miami-Dade County (Figure 24):

- Protecting the environment, including water sources, biodiversity: 70%
- Increasing community's resilience to storms, heat, and flooding: 66%
- Improving heath (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy): 62%

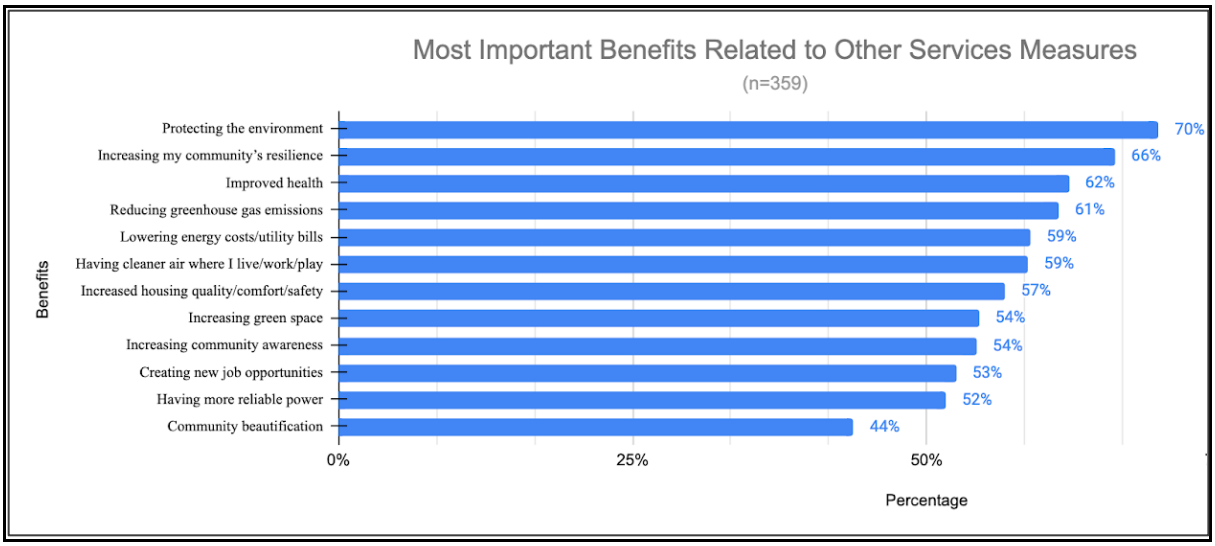


Figure 24

The top three priorities in other important areas reported by organizations in Miami-Dade County were (Figure 25):

- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 75%
- More reliable trash/waste and recycling services:61%
- Improvements to make agriculture more sustainable: 57%

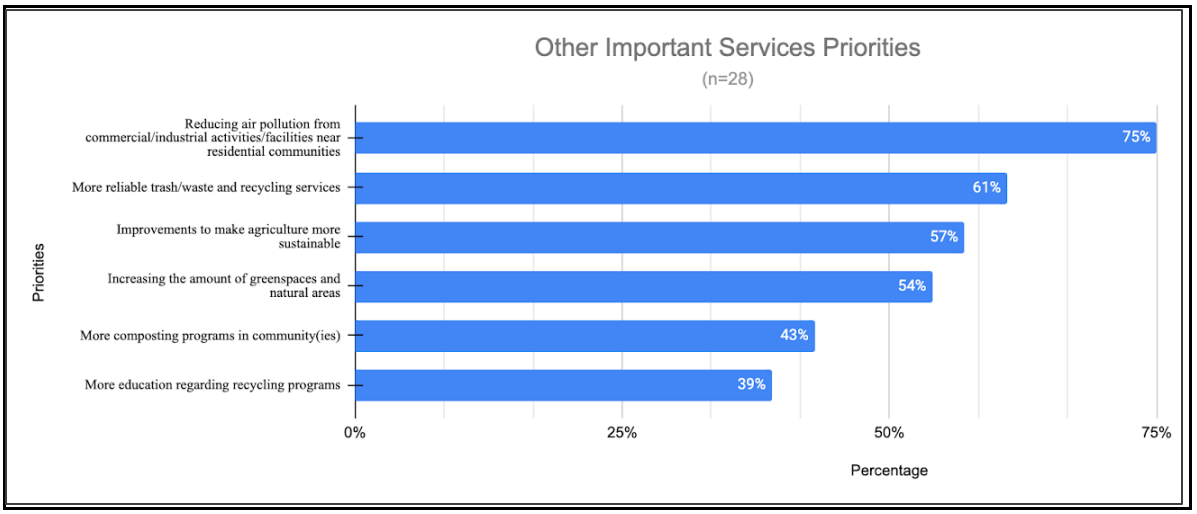


Figure 25

The top three most important benefits related to other areas reported by organizations in Miami-Dade County (Figure 26):

- Reducing greenhouse gas emissions that warm the planet: 96%
- Protecting the environment, including water sources, biodiversity: 86%
- Increasing community resilience to storms, heat, and flooding: 86%

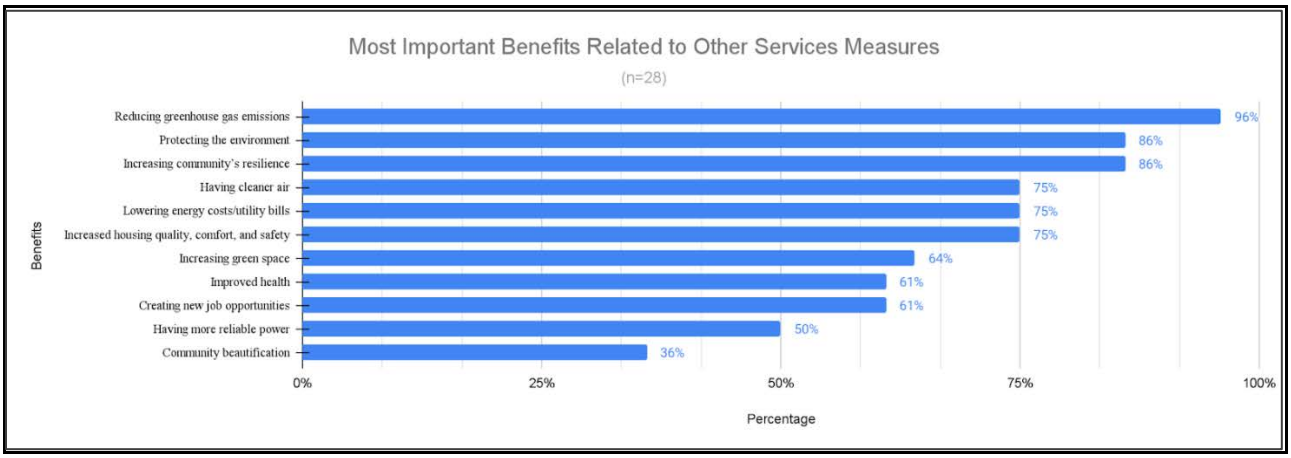


Figure 26

LIDACs Survey Findings - Monroe County Priorities and Benefit

Transportation

The top three transportation priorities reported individuals in Monroe County were (Figure 27):

- Safe and accessible bike routes: 35%
- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk or go to: 32%
- These were equally and highly important:
    - Financial incentives for electric vehicles: 26%
    - More efficient bus options (faster, more reliable, improved routes): 26%

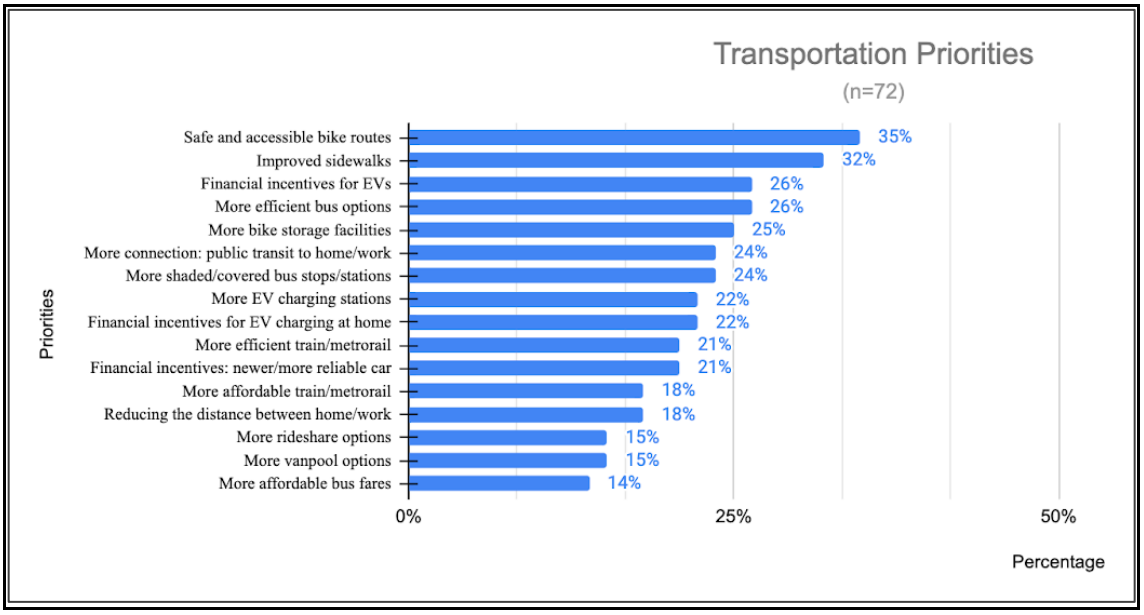


Figure 27

The top three most important benefits related to transportation reported by individuals in Monroe County (Figure 28):

- Protecting the environment, including water sources, biodiversity: 60%
- Increasing community's resilience to storm, heat, and flooding: 49%
- Reducing greenhouse gas emission that warm the planet: 43%

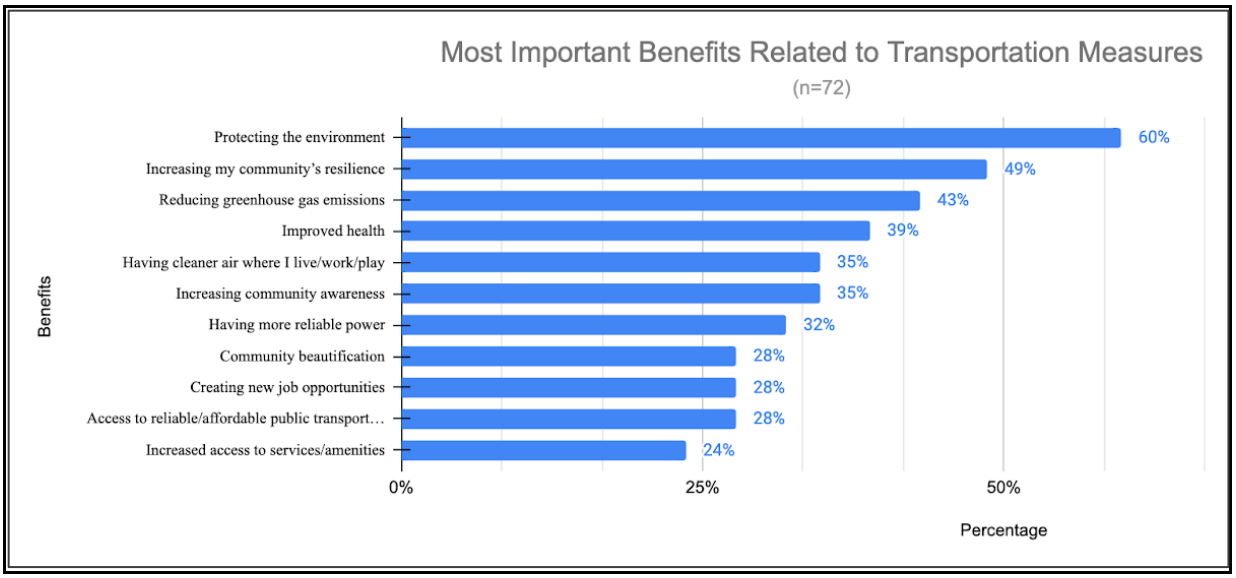


Figure 28

The top transportation priorities for organizations serving Monroe County were (Figure 29):

- More efficient bus options: 100%
- More shaded and/or covered bus stops/stations to increase residents of the community to use public transit: 67%
- Reducing the distance between where people live and work: 67%

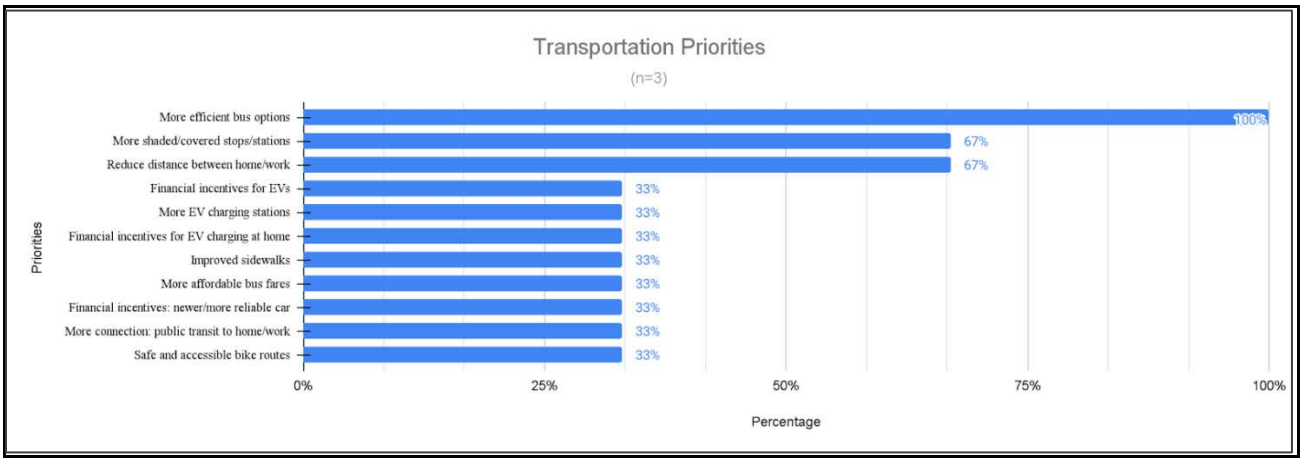


Figure 29

The top three most important benefits related to transportation reported by organizations in Monroe County (Figure 30):

- Having access to reliable and affordable public transportation: 100%
- Increasing community's resilience to storms, heat, and flooding: 100%
- Reducing greenhouse gas emissions that warm the planet: 100%

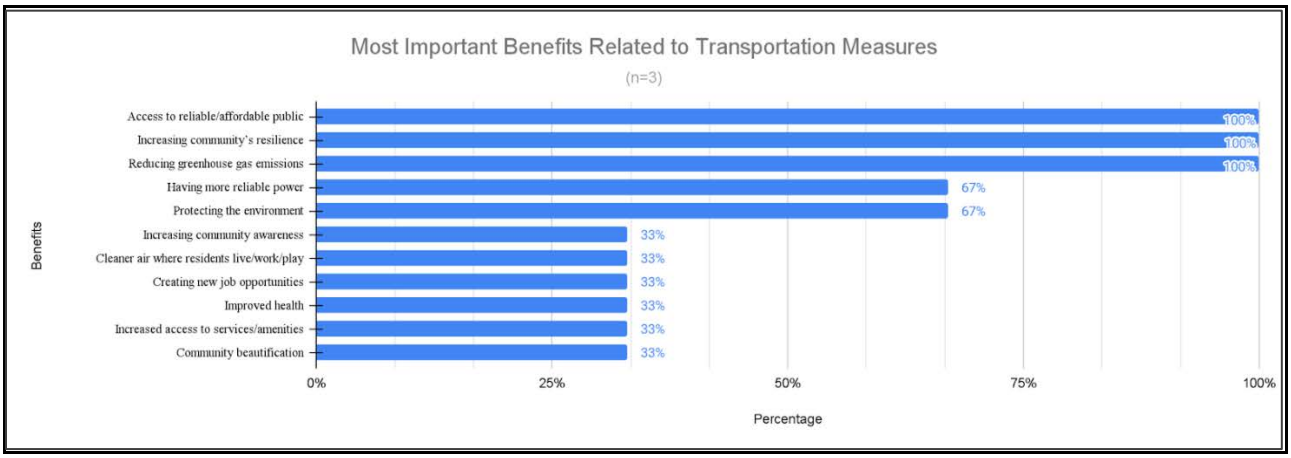


Figure 30

Housing

The top three housing priorities reported individuals in Monroe County were (Figure 31):

- Financial incentives to improve housing conditions: 40%
- More trees around where people live/work to provide cooling: 38%
- These were equally and highly important:
    - Financial incentives to install rooftop solar panels: 36%
    - Financial incentives to upgrade air conditioning unit to a more efficient model: 36%

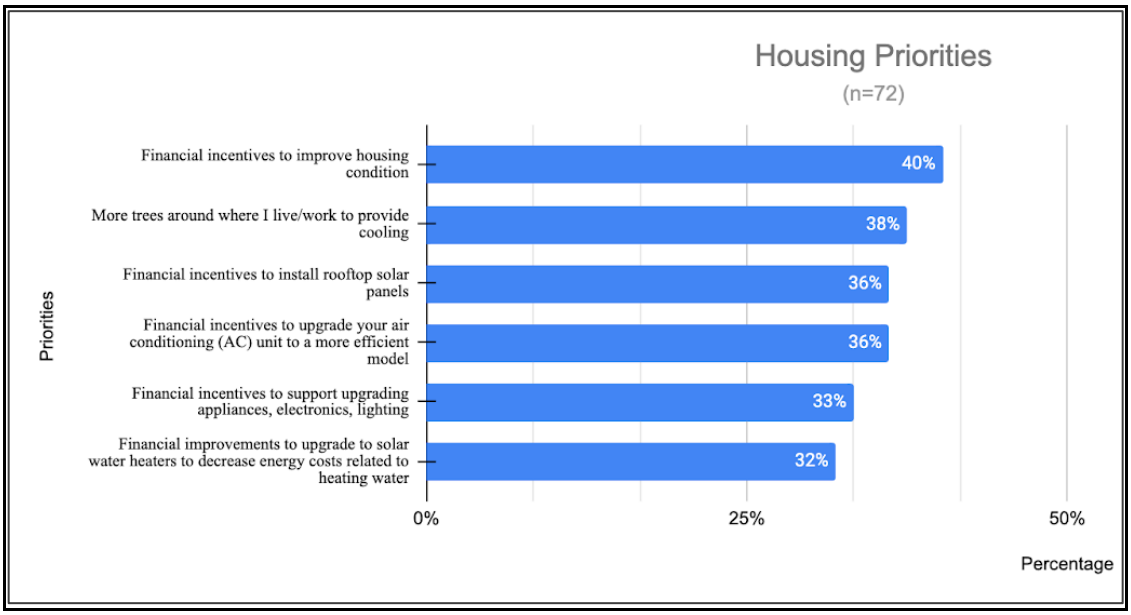


Figure 31

The top three most important benefits related to housing reported by individuals in Monroe County (Figure 32):

- Protecting the environment, including water sources, biodiversity: 51%
- Increasing community's resilience to storms, heat and flooding: 49%
- Lowering energy costs/utility bills: 47%

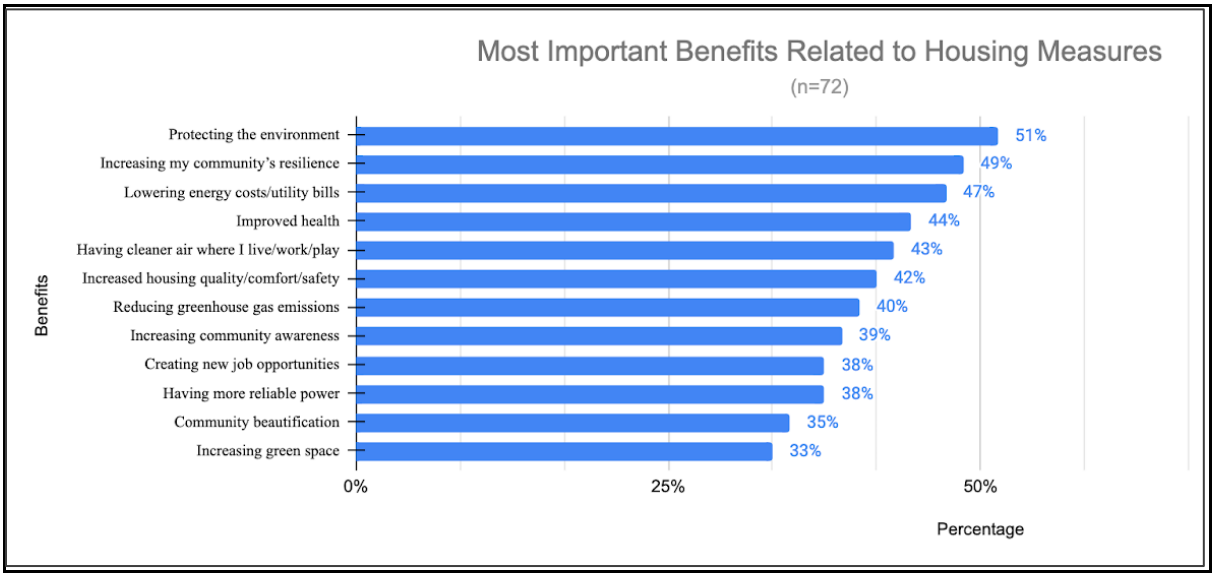


Figure 32

The top three housing priorities for organizations serving Monroe County were (Figure 33):

- Financial incentives to improve housing condition: 100%
- Financial incentives to support upgrading appliances, electronics, lighting: 67%
- These were equally and highly important:
    - Financial incentives to upgrade air conditioning unit to a more efficient model: 33%
    - Financial incentives to upgrade solar water heaters to decrease energy costs related to heating: 33%
    - More trees around where community residents live/work to provide cooling: 33%
    - Financial incentives to install rooftop solar panels: 33%

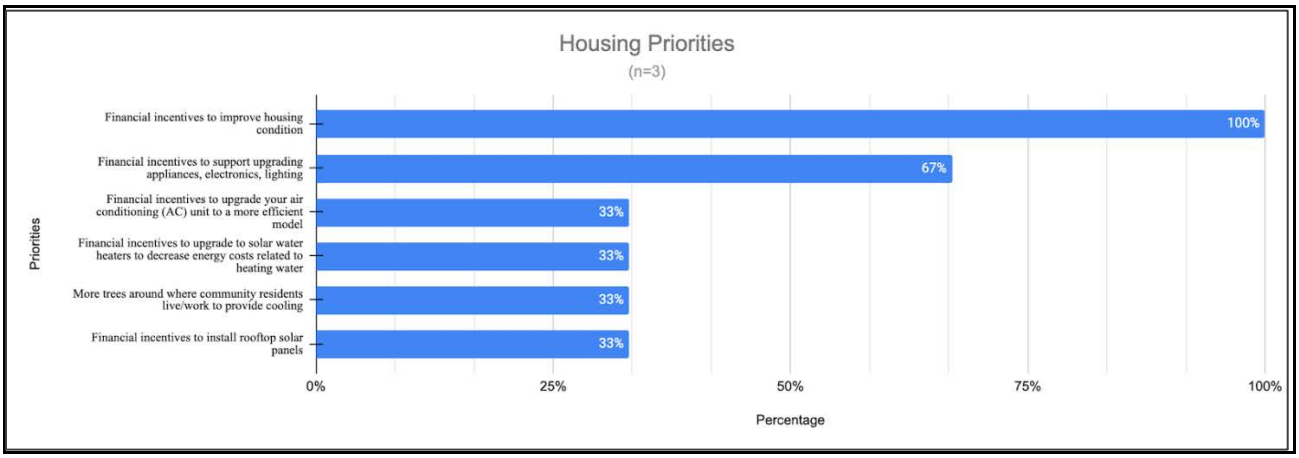


Figure 33

The top three most important benefits related to housing reported by organizations in Monroe County (Figure 34):

- Increasing community's resilience to storms, heat, and flooding: 67%
- Reducing greenhouse gas emissions that warm the planet: 67%
- These were equally and highly important:
    - Lowering energy costs/utility bills: 33%
    - Increasing community awareness of strategies for reducing greenhouse gases: 33%

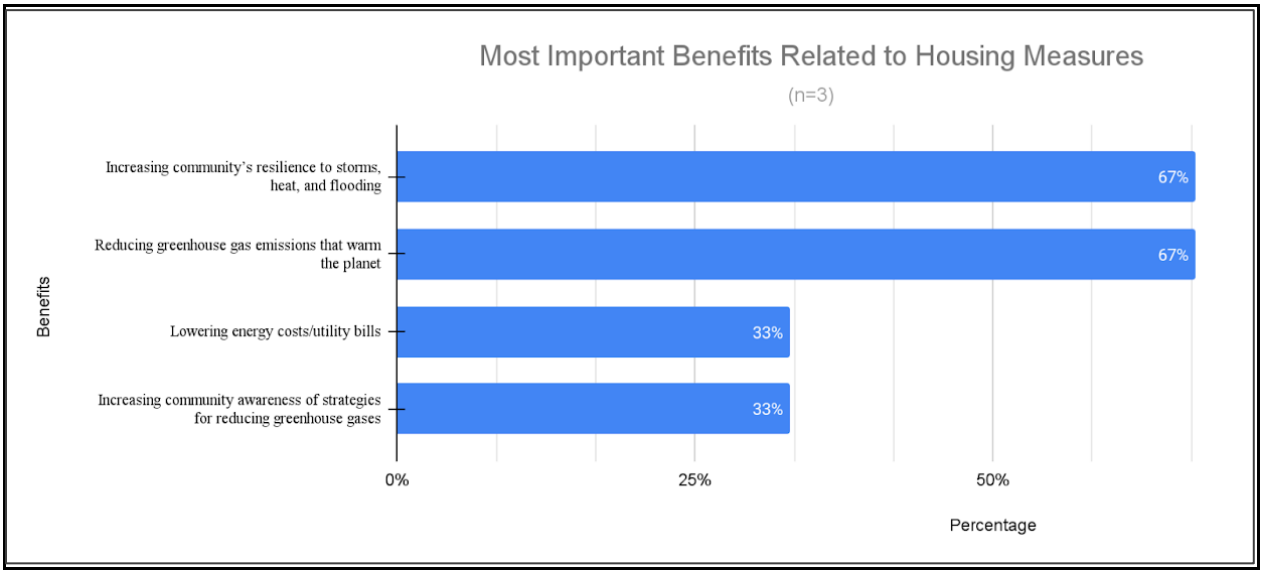


Figure 34

Other Services

The top three priorities in other important areas reported by individuals in Monroe County were (Figure 35):

- Increasing the amount of green spaces and natural areas: 42%
- Improvements to make agriculture more sustainable: 42%
- More reliable trash/waste and recycling services: 40%

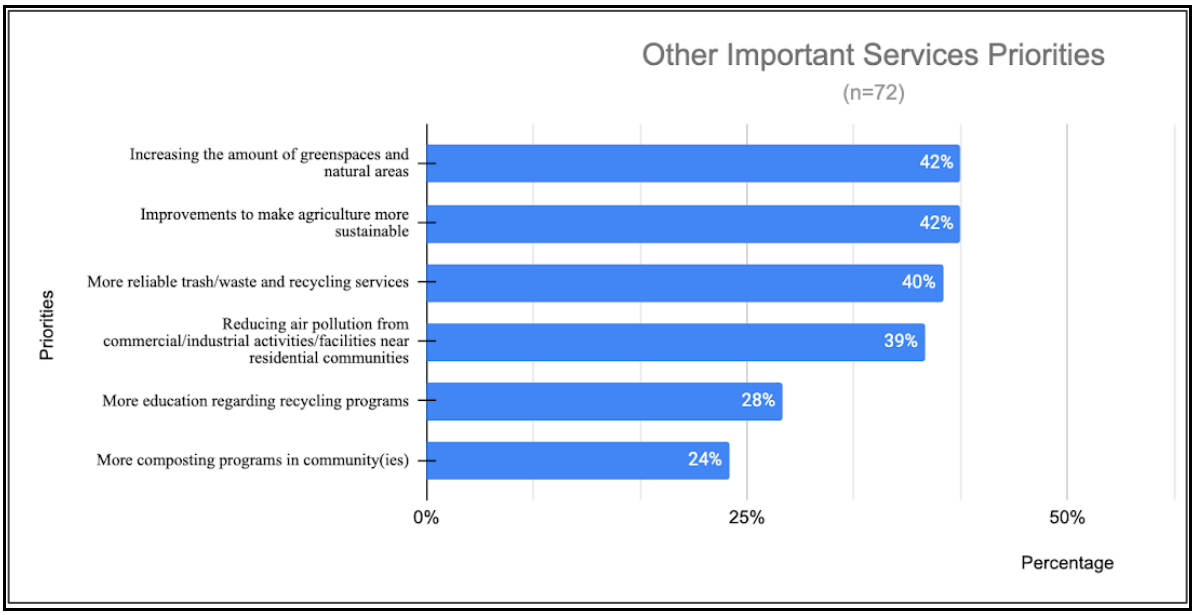


Figure 35

The top three most important benefits related to other important areas reported by individuals in Monroe County (Figure 36):

- Protecting the environment, including water sources, biodiversity: 56%
- Lowering energy costs/utility bills: 53%
- Having cleaner air where community residents live/work/play: 50%

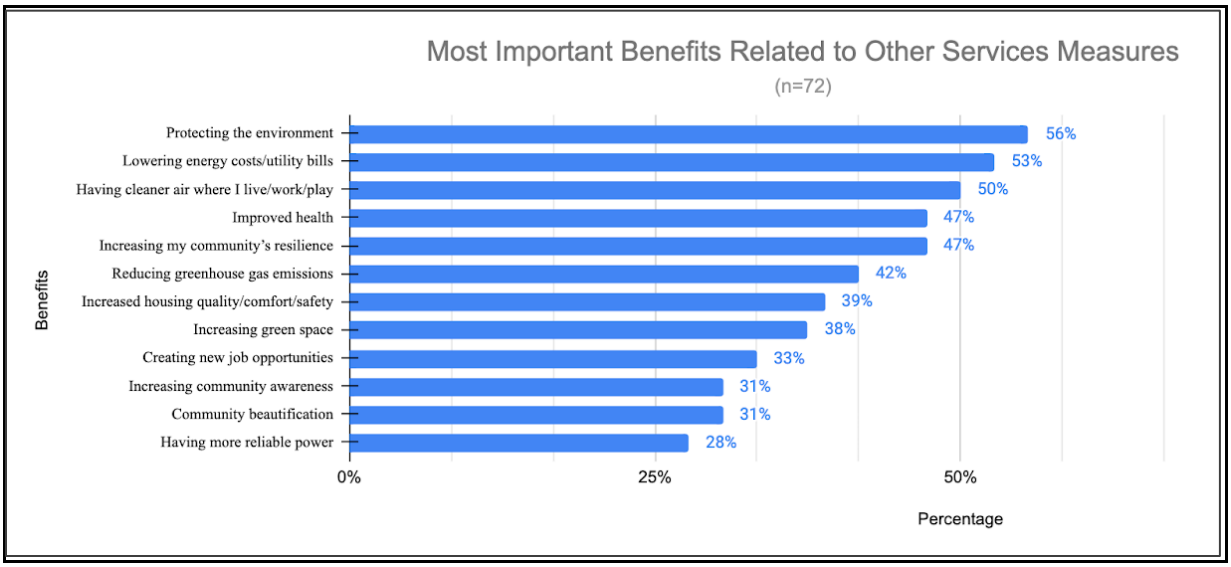


Figure 36

The top three priorities in other important areas reported by organizations in Monroe County were (Figure 37):

- Improvements to make agriculture more sustainable: 67%
- These were equally and highly important:
    - More education regarding recycling programs: 33%
    - More reliable trash/waste and recycling services: 33%
    - More composting programs in communities: 33%
    - Reducing air pollution from commercial/industrial activities/facilities near residential communities: 33%
    - Increasing the amount of green spaces and natural areas: 33%

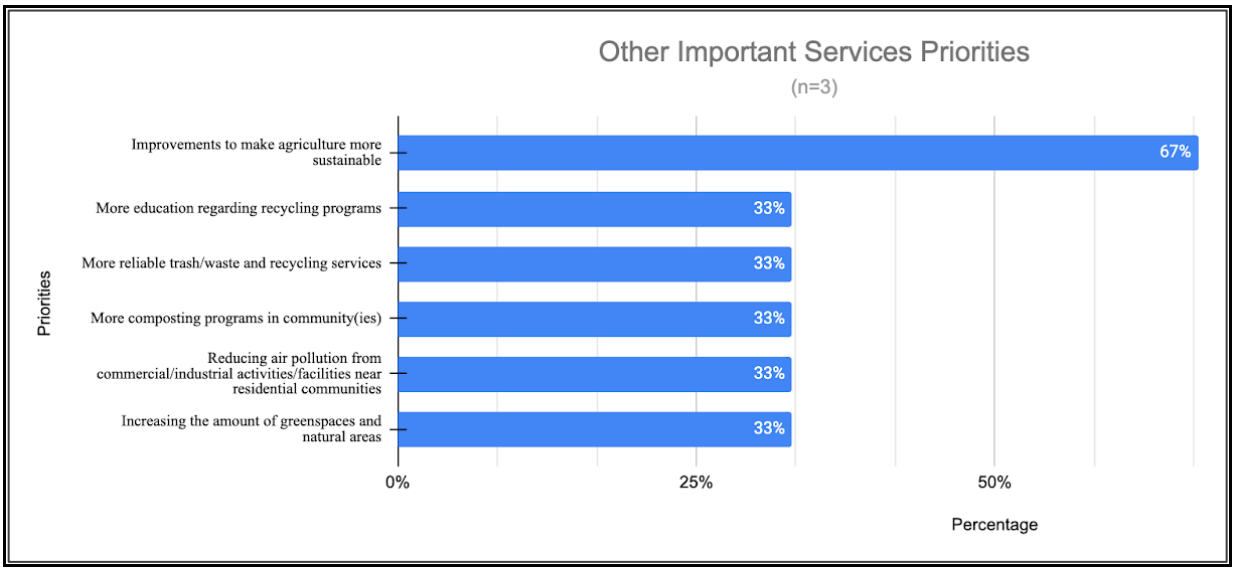


Figure 37

The top three most important benefits related to other areas reported by organizations in Monroe County (Figure 38):

- Increasing community resilience to storms, heat, and flooding: 67%
- Reducing greenhouse gas emissions that warm the planet: 67%
- These were equally and highly important:
    - Increasing community awareness of strategies for reducing greenhouse gases: 33%
    - Lowering energy costs/utility bills: 33%
    - Protecting the environment, including water sources, biodiversity: 33%

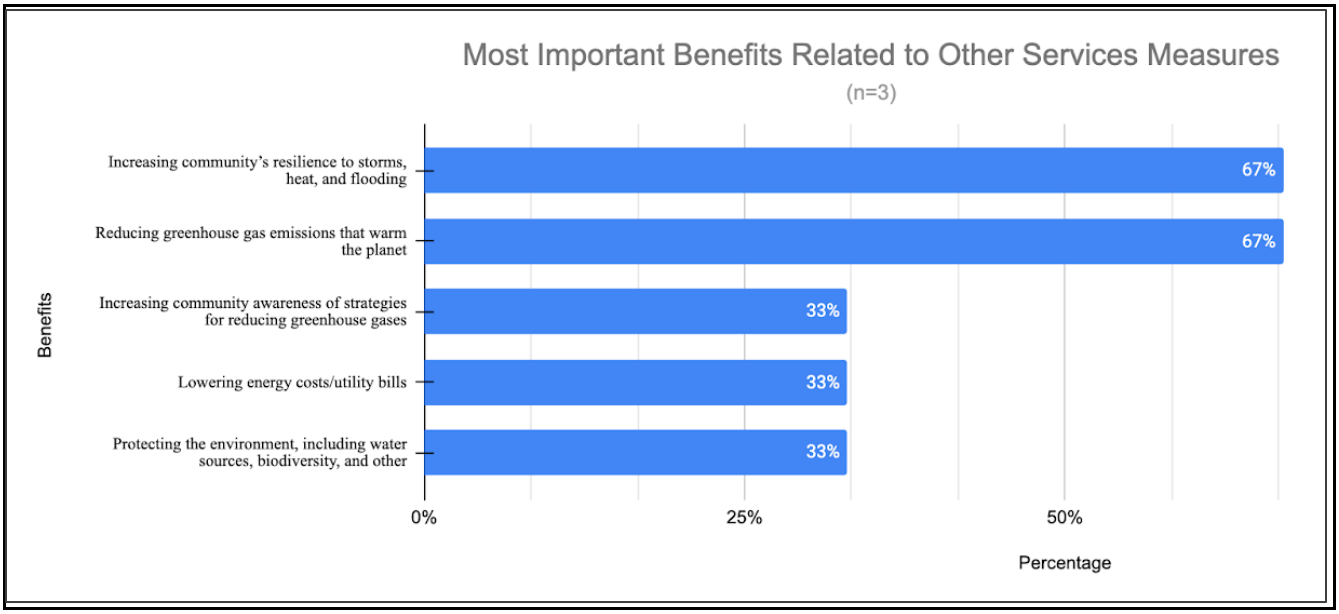


Figure 38

LIDACs Survey Findings - Palm Beach County Priorities and Benefit

Transportation

The top three transportation priorities reported individuals in Palm Beach County were (Figure 39):

- Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk or go to: 33%
- Financial incentives for newer/more reliable vehicle: 30%
- Safe and accessible bike routes: 29%

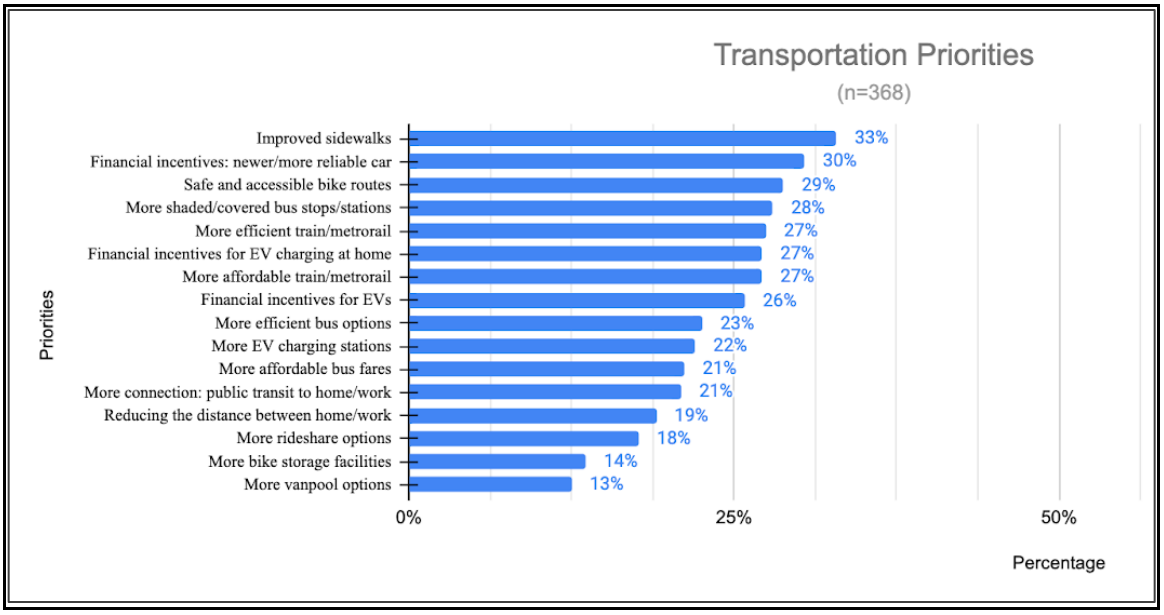


Figure 39

The top three most important benefits related to transportation reported by individuals in Palm Beach County (Figure 40):

- Protecting the environment, including water sources, biodiversity: 64%
- Improving heath (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy): 57%
- Reducing greenhouse gas emission that warm the planet: 56%

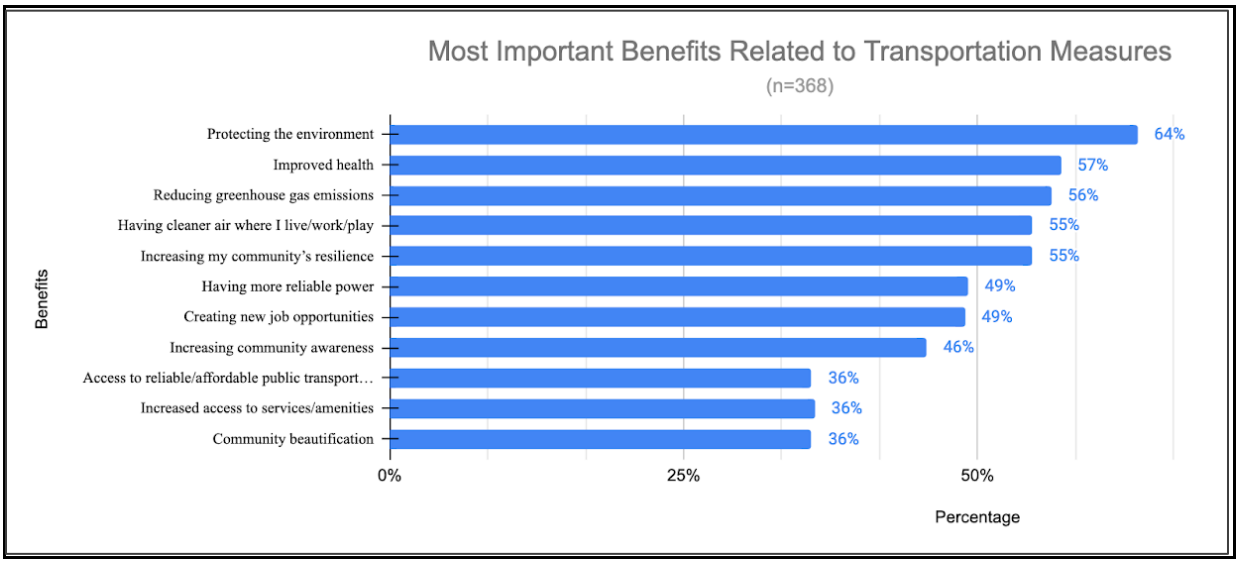


Figure 40

The top transportation priorities for organizations serving Palm Beach County were (Figure 41):

- Safe and accessible bike routes: 83%
- These were equally and highly important:
    - More electric vehicle charging stations where community residents live/work/play: 67%
    - More shaded and/or covered bus stops/stations to increase residents of the community to use public transit: 67%
    - More connection from public transit to where community residents live and/or work: 67%
    - Reducing the distance between where people live and work: 67%
    - Improved sidewalks (e.g., street lighting, tree canopy) to increase the number of places individuals can walk or go to: 67%

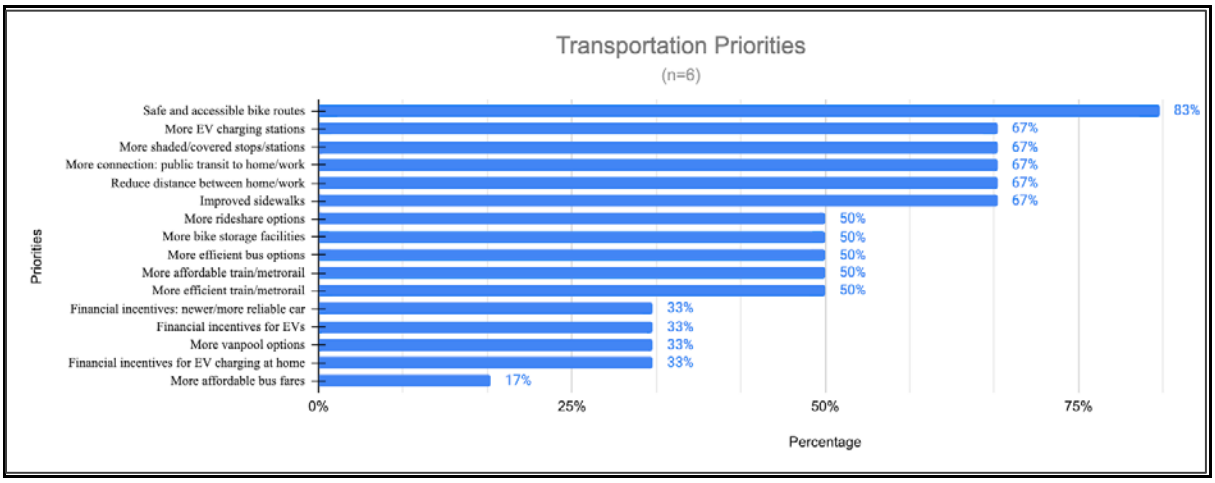


Figure 41

The top three most important benefits related to transportation reported by organizations in Palm Beach County (Figure 42):

- Increasing community awareness of strategies for reducing greenhouse gases: 83%
- Reducing greenhouse gas emissions that warm the planet: 83%
- These were equally and highly important:
    - Increasing community's resilience to storms, heat, and flooding: 67%
    - Having access to reliable and affordable public transportation: 67%
    - Having cleaner air where community residents live/work/play: 67%
    - Creating new job opportunities: 67%
    - Protecting the environment, including water sources, biodiversity: 67%
    - Improving heath (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy): 67%

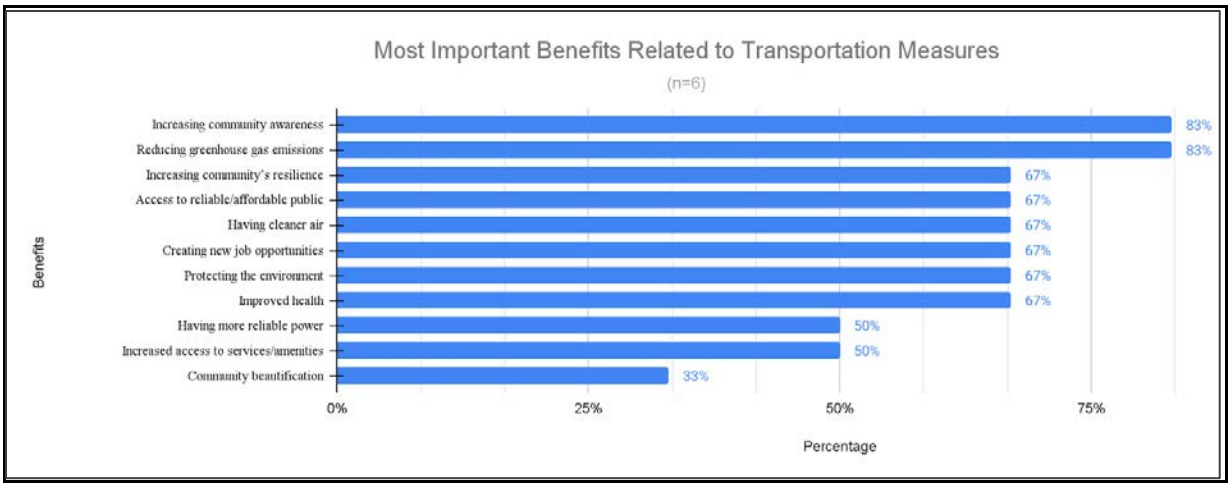


Figure 42

Housing

The top three housing priorities reported individuals in Palm Beach County were (Figure 43):

- Financial incentives to improve housing conditions: 53%
- Financial incentives to upgrade air conditioning unit to a more efficient model: 48%
- Financial incentives to support upgrading appliances, electronics, lighting: 47%

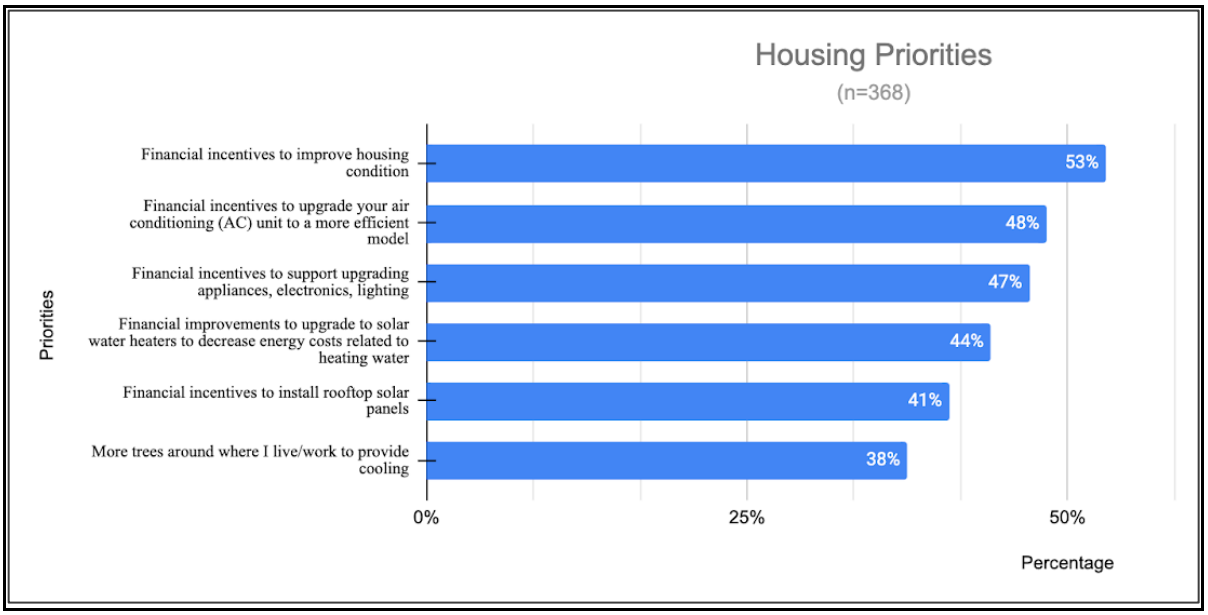


Figure 43

The top three most important benefits related to housing reported by individuals in Palm Beach County (Figure 44):

- Lowering energy costs/utility bills: 66%
- Protecting the environment, including water sources, biodiversity: 63%
- Improving heath (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy): 62%

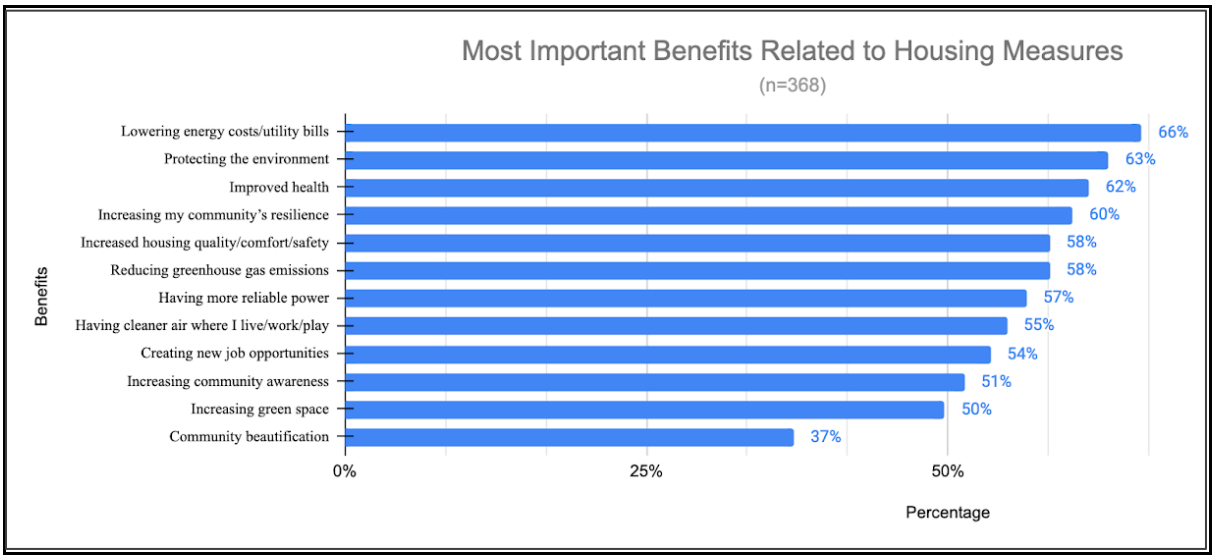


Figure 44

The top three housing priorities for organizations serving Palm Beach County were (Figure 45):

- Financial incentives to upgrade air conditioning unit to a more efficient model: 67%
- More trees around where community residents live/work to provide cooling: 67%
- These were equally and highly important:
    - Financial incentives to support upgrading appliances, electronics (e.g. smart thermostats), lighting (e.g. LED light bulbs): 50%
    - Financial incentives to install rooftop solar panels: 50%
    - Financial incentives to improve housing condition (e.g., new roof, windows, insulation): 50%
    - Financial incentives to upgrade to solar water heaters to decrease energy costs related to heating water: 50%

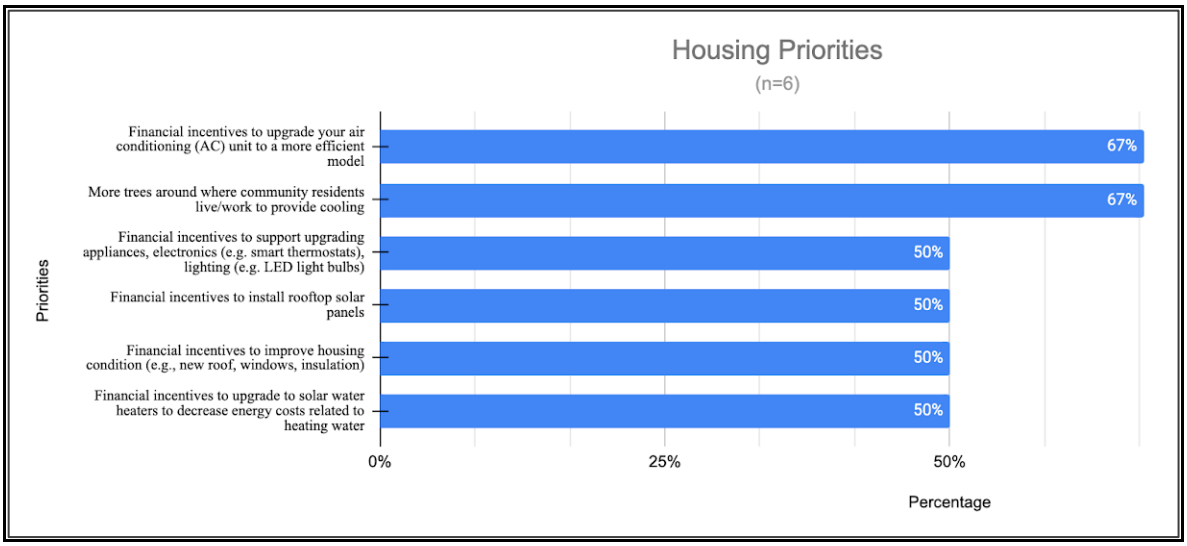


Figure 45

The top three most important benefits related to housing reported by organizations in Palm Beach County (Figure 46):

- Having cleaner air where community residents live/work/play: 83%
- Increasing community's resilience to storms, heat, and flooding: 83%
- Reducing greenhouse gas emissions that warm the planet: 83%

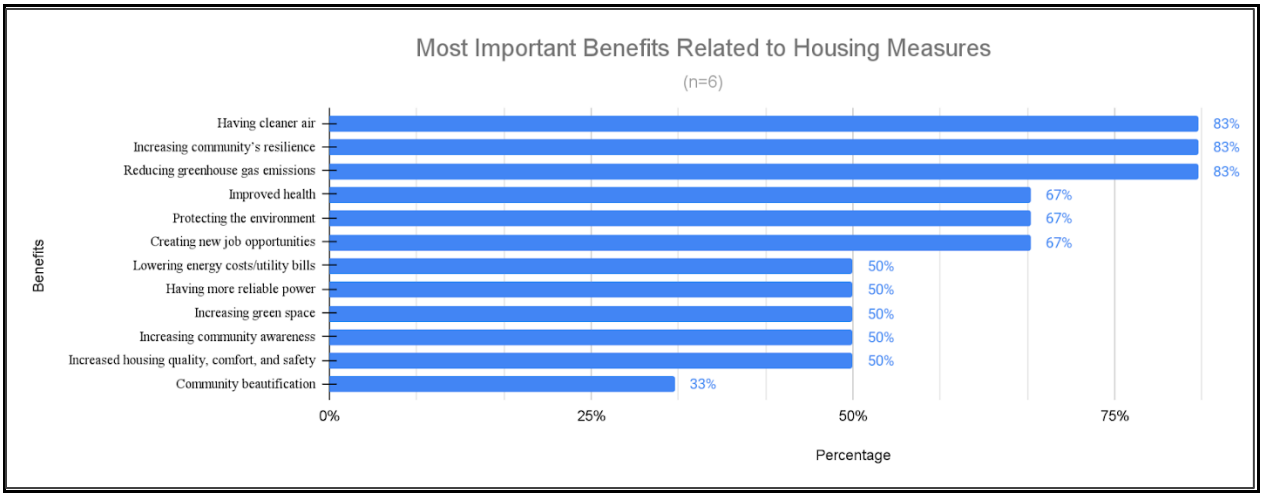


Figure 46

Other Services

The top three priorities in other important areas reported by individuals in Palm Beach County were (Figure 47):

- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 61%
- Improvements to make agriculture more sustainable: 51%
- Increasing the amount of green spaces and natural areas: 49%

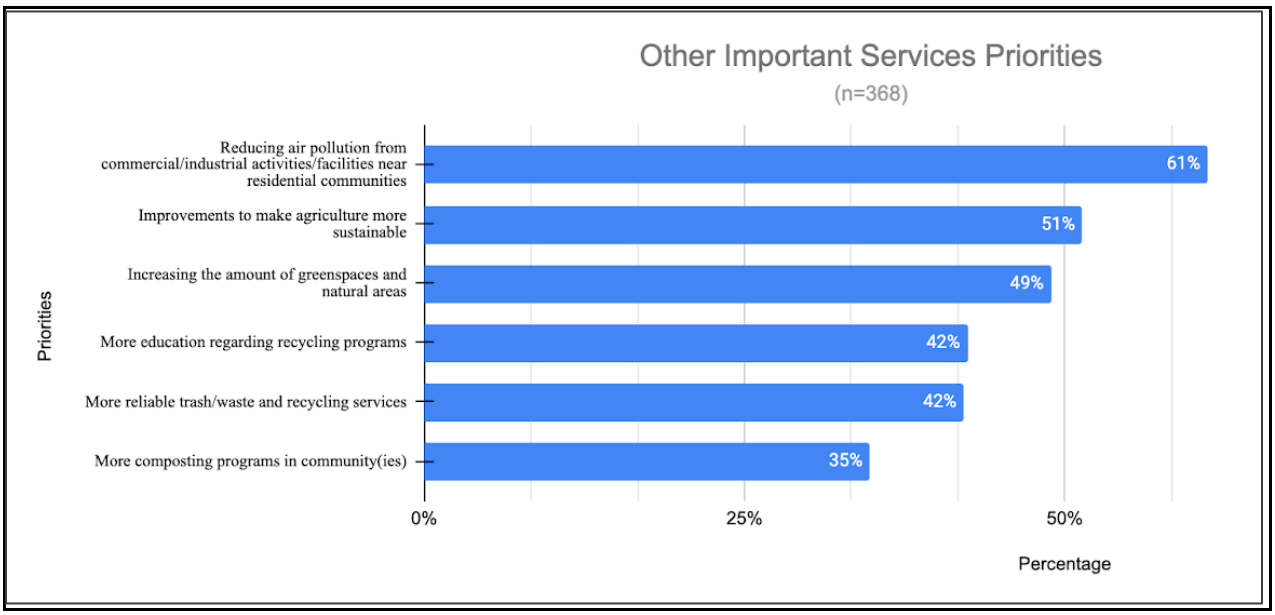


Figure 47

The top three most important benefits related to other important areas reported by individuals in Palm Beach County (Figure 48):

- Protecting the environment, including water sources, biodiversity: 65%
- Lowering energy costs/utility bills: 64%
- Improving heath (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy): 63%

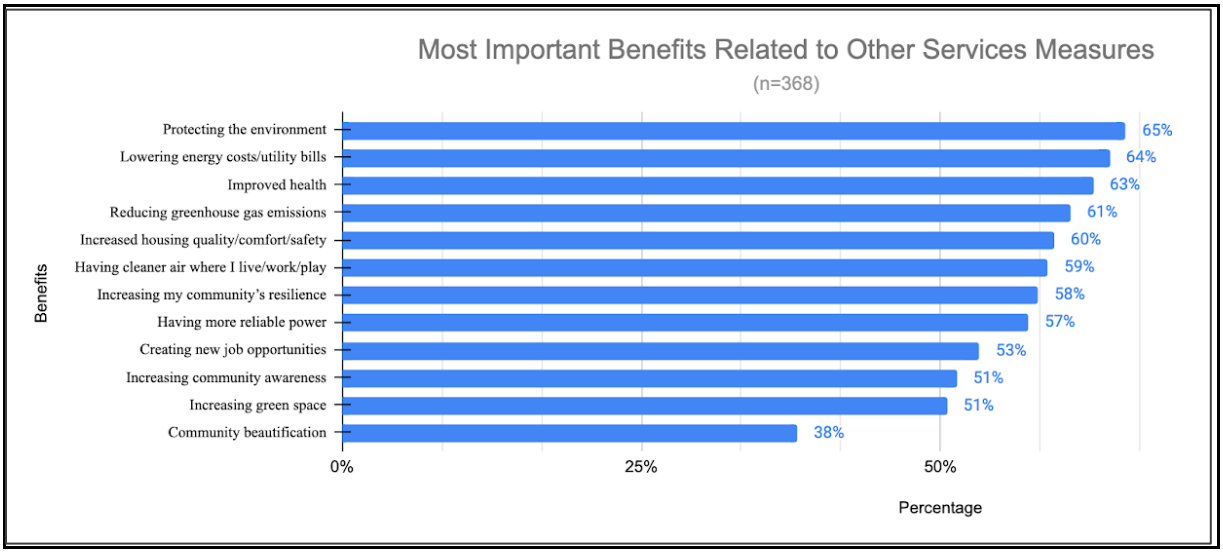


Figure 48

The top three priorities in other important areas reported by organizations in Palm Beach County were (Figure 49):

- Reducing air pollution from commercial/industrial activities/facilities near residential communities: 67%
- Increasing the amount of green spaces and natural areas: 67%
- These were equally and highly important:
    - More education regarding recycling programs: 50%
    - Improvements to make agriculture more sustainable: 50%
    - More composting programs in community(ies): 50%

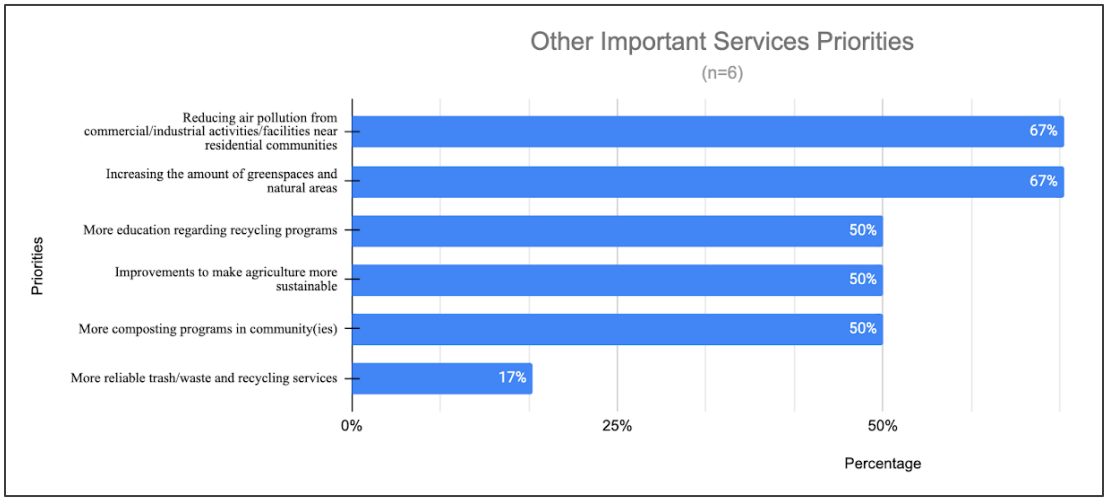


Figure 49

The top three most important benefits related to other areas reported by organizations in Palm Beach County (Figure 50):

- Having cleaner air where community residents live/work/play: 100%
- Creating new job opportunities: 100%
- These were equally and highly important:
    - Increasing community awareness of strategies for reducing greenhouse gases: 83%
    - Reducing greenhouse gas emissions that warm the planet: 83%

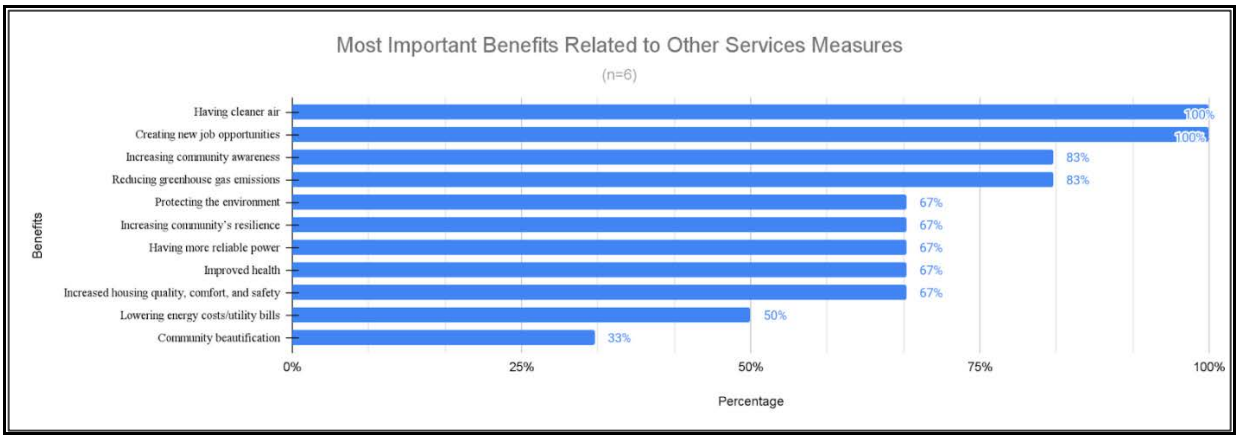

Most Important Benefits Related to Other Services Measures
(n=6)
Having cleaner air
Creating new job opportunities
Increasing community awareness
Reducing greenhouse gas emissions
Protecting the environment
Increasing community's resilience
Having more reliable power
Improved health
Increased housing quality, comfort, and safety
Lowering energy costs/utility bills
Community beautification
100%
100%
83%
83%
67%
67%
67%
67%
67%
50%
33%
Benefits
0%
25%
50%
75%
100%
Percentage

Figure 50

LIDAC Needs/Wants Survey

Overview

The Southeast Florida Regional Climate Change Compact, a partnership between Broward, Miami-Dade, Monroe, and Palm Beach counties, is leading the development of a regional greenhouse gas (GHG) reduction plan, which will reduce air pollution that is warming our planet, clean up our air, and provide important benefits to communities in the region, such as reduced energy bills, improved public health, and more jobs. The Plan will cover the four-county region, inclusive of Broward, Miami-Dade, Monroe, and Palm Beach counties.

It is important to the four counties to incorporate feedback from those that live and/or work in the Southeast Florida region and the organizations that serve Southeast Florida communities, regarding the most significant community challenges and needs as it relates to this work.

This survey will take about 10 minutes to complete.

The survey results will be shared in early January 2024 in a virtual community meeting for feedback. Please stay tuned via our listserv, Facebook and Instagram.

This survey will be closed at 11:59 pm on January 5, 2024. We thank you in advance for your time to provide your feedback.

Q1. Do you represent an organization that works with communities in Southeast Florida or are you responding as an individual community member? Check one that applies.

- I represent a community organization
- I am responding as an individual community member

—----------

[QUESTIONNAIRE FOR ORGANIZATIONS]

Organization Name: _____

Communities your organization serves (please be as specific as possible):_____

Q2. What kind of organization are you?

- Social Organization (e.g., providing social services)
- Community-Based Organization
- Faith-Based Organization
- Political Organization
- Other:_____

Q3. What municipality do you live in? If you do not know, leave blank_____

Q4. What municipality do you work in? If you do not know, leave blank_____

Q5. What zipcode do you live in? _____

Q6. What zipcode do you work in? _____

The following questions are to help us understand what you see as priorities in the communities you work.

Q7. Greenhouse Gasses (GHGs) trap heat and make the planet warmer. Reducing GHGs can (check all that apply):

- Stabilize global temperature
- Improve air quality
- Create job opportunities in areas like renewable energy, energy efficiency, sustainable technology
- Save on energy costs
- Protect biodiversity
- Reduce the impacts or severity of extreme weather events
- Protect water and land
- Protect communities often disproportionately impacted by environmental burden
- Increase public awareness on climate change

Q8. What are the most significant challenges that the community(ies) your organization serves face?

Please rank each challenge:

0: Not challenging at all - communities face minimal challenges

1: Slightly challenging - community challenges are manageable with existing resources

2: Neutral
3: Somewhat challenging - communities face significant challenges that require high level of efforts and resources
4: Extremely challenging - communities face major obstacle to progress

Challenges Communities Face	**0**	**1**	**2**	**3**	**4**
High energy bills	●	●	●	●	●
Substandard housing conditions (e.g. old roof, lack of or inefficient AC, old windows, etc.)	●	●	●	●	●
Lack of access to reliable, convenient, safe, and affordable public transportation or mobility options	●	●	●	●	●
Distance between where I live and work (commuting time/distance)	●	●	●	●	●
Unable to afford a newer/more reliable vehicle	●	●	●	●	●
Lack of access to green spaces (e.g., parks and natural areas)	●	●	●	●	●
Exposure to air pollution (e.g., air that is not clean, smoke)	●	●	●	●	●
Living close to a major roadway, industrial facility, wastewater treatment facility, landfill, brownfield	●	●	●	●	●
Lack of reliable/consistent trash/waste and recycling options	●	●	●	●	●
Lack of access to good paying jobs	●	●	●	●	●
Exposure to extreme heat	●	●	●	●	●
Exposure to flooding	●	●	●	●	●
Lack of trees that can provide shade	●	●	●	●	●
Health related challenges (e.g., asthma, high blood pressure)	●	●	●	●	●
Other: _____	●	●	●	●	●

For Q9-Q14, we are asking you what you see as priorities and benefits related to each transportation, housing and other services for the community(ies) your organization serves.

Q9. Transportation - Please rate how important each of the items below is to the community(ies) your organization serves.	1 Extremely Important	2 Moderately Important	3 Neutral	4 Slightly Important	5 Not Important At All
Reducing the distance between where people live and work (commute time/distance)	●	●	●	●	●
Improved sidewalks (street lighting, tree canopy) would increase the number of places people would walk or go to	●	●	●	●	●
More rideshare options that serve the community(ies) (e.g. uber/lyft)	●	●	●	●	●
More vanpool options that serve the community(ies) (e.g. carpool options that save costs)	●	●	●	●	●
More connection from public transit to where community residents live and/or work	●	●	●	●	●
Safe and accessible bike routes	●	●	●	●	●
More bike storage facilities	●	●	●	●	●
More shaded and/or covered bus stops/stations would increase residents of the community to use public transit	●	●	●	●	●
More affordable bus fares	●	●	●	●	●
More efficient bus options (faster, more reliable, improved routes etc.)	●	●	●	●	●
More affordable train/metrorail	●	●	●	●	●
More efficient train/metrorail (faster,	●	●	●	●	●

more reliable, improved routes, etc).					
Financial incentives for newer/more reliable vehicle	●	●	●	●	●
Financial incentives for electric vehicles	●	●	●	●	●
More electric vehicle charging stations where community residents live/work/play	●	●	●	●	●
Financial incentives for electric vehicle charging at home	●	●	●	●	●
Other: _____	●	●	●	●	●

Q10. Benefits to your community if the above service priorities related to transportation from Q9 are addressed:	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
Having access to reliable and affordable public transportation	●	●	●	●	●
Having cleaner air where community residents live/work/play	●	●	●	●	●
Creating new job opportunities	●	●	●	●	●
Protecting the environment, including water sources, biodiversity (e.g., forest, trees, birds), and other	●	●	●	●	●
Increasing community awareness of strategies for reducing greenhouse gases	●	●	●	●	●
Increasing community's resilience to storms, heat, and flooding	●	●	●	●	●
Reducing greenhouse gas emissions that warm the planet	●	●	●	●	●
Having more reliable power	●	●	●	●	●
Improved health (e.g., decreased risk of asthma, diabetes, heart disease, low life	●	●	●	●	●

expectancy)					
Increased access to services/amenities in the community(ies)	●	●	●	●	●
Community beautification	●	●	●	●	●
Other_____	●	●	●	●	●

Q11. Housing - Please rate how important each of the items below is to the community(ies) your organization serves.	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
Financial incentives to support upgrading appliances (e.g. energy-efficient refrigerators, washer/dryer, stoves), electronics (e.g. smart thermostats), lighting (e.g. LED light bulbs)	●	●	●	●	●
Financial incentives to upgrade your air conditioning (AC) unit to a more efficient model	●	●	●	●	●
Financial incentives to improve housing condition (e.g., new roof, windows, insulation)	●	●	●	●	●
Financial improvements to upgrade to solar water heaters to decrease energy costs related to heating water	●	●	●	●	●
More trees around where community residents live/work to provide cooling	●	●	●	●	●
Financial incentives to install rooftop solar panels	●	●	●	●	●
Other: _____	●	●	●	●	●

Q12. Benefits to your	**1**	**2**	**3**	**4**	**5**

community(ies) if the above service priorities related to housing from Q11 are addressed:	**Extremely Important**	**Moderately Important**	**Neutral**	**Slightly Important**	**Not Important At All**
Having cleaner air where community residents live/work/play	●	●	●	●	●
Creating new job opportunities	●	●	●	●	●
Lowering energy costs/utility bills	●	●	●	●	●
Protecting the environment, including water sources, biodiversity (e.g., forest, trees, birds), and other	●	●	●	●	●
Increasing green space	●	●	●	●	●
Increasing community awareness of strategies for reducing greenhouse gases	●	●	●	●	●
Increasing community's resilience to storms, heat, and flooding	●	●	●	●	●
Reducing greenhouse gas emissions that warm the planet	●	●	●	●	●
Having more reliable power	●	●	●	●	●
Improved health (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy)	●	●	●	●	●
Increased housing quality, comfort, and safety	●	●	●	●	●
Community beautification	●	●	●	●	●
Other_____	●	●	●	●	●

Q13. Other Priorities - Please rate how important each of the items below is to the community(ies) your organization serves.	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
More education regarding recycling programs	●	●	●	●	●

More reliable trash/waste and recycling services	●	●	●	●	●
More composting programs in community(ies)	●	●	●	●	●
Reducing air pollution from commercial/industrial activities/facilities near residential communities (e.g., ports, airports, landfills, wastewater treatment facilities, energy generation facilities etc.)	●	●	●	●	●
Increasing the amount of greenspaces and natural areas (e.g., forested lands, coastal habits, wetlands and mangroves etc.)	●	●	●	●	●
Improvements to make agriculture more sustainable	●	●	●	●	●
Other: _____	●	●	●	●	●

Q14. Additional benefits to your community(ies) if the above other service priorities from Q13 are addressed:	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
Having cleaner air where community residents live/work/play	●	●	●	●	●
Creating new job opportunities	●	●	●	●	●
Lowering energy costs/utility bills	●	●	●	●	●
Protecting the environment, including water sources, biodiversity (e.g., forest, trees, birds), and other	●	●	●	●	●
Increasing green space	●	●	●	●	●
Increasing community awareness of strategies for reducing greenhouse gases	●	●	●	●	●

Increasing community's resilience to storms, heat, and flooding	●	●	●	●	●
Reducing greenhouse gas emissions that warm the planet	●	●	●	●	●
Having more reliable power	●	●	●	●	●
Improved health (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy)	●	●	●	●	●
Increased housing quality, comfort, and safety	●	●	●	●	●
Community beautification	●	●	●	●	●
Other_____	●	●	●	●	●

Q15. How long have you worked with communities living in Southeast Florida?

- Less than a year
- 1 year - 3 years
- 4 years -7 years
- 7 years -10 years
- 10+ years

Q16. What is the average household income of the community(ies) with whom your organization works?

- Less than $25,000/ year
- $25,000- $49,000 a year
- $50,000- $74,999 a year
- $75,000- $99,999
- $100,000 +

Q17. Which of the following describes the living status of the majority of the members of the community(ies) with whom your organization works?

- Renter
- Homeowner
- Other_____

Q18. Which language(s) the community(ies) you work with are more comfortable speaking in? (select all that apply)

- English
- Spanish

- Haitian Creole
- Portuguese
- French
- Other_____
- Prefer not to say

Q19. Approximately how many individuals serve in the community(ies) where you work? _____

Note:
Upon completion of the online survey, respondents receives confirmation of completing survey with the following information:

"Thank you for taking the time to complete this survey. We'd like to invite you to a webinar to be held in January 2024 where we will share the findings of this survey. If you are interested in participating, please complete this form.

Name_____
Email_____

__----------

[QUESTIONNAIRE FOR INDIVIDUALS]

Q2. What municipality do you live in? If you do not know, leave blank_____

Q3. What municipality do you work in? If you do not know, leave blank_____

Q4. What zipcode do you live in? _____

Q5. What zipcode do you work in? _____

The following questions are to help us understand what you see as priorities in the communities you work.

Q6. Greenhouse Gasses (GHGs) trap heat and make the planet warmer. Reducing GHGs can (check all that apply):

- Stabilize global temperature
- Improve air quality
- Create job opportunities in areas like renewable energy, energy efficiency, sustainable technology
- Save on energy costs
- Protect biodiversity
- Reduce the impacts or severity of extreme weather events
- Protect water and land
- Protect communities often disproportionately impacted by environmental burden
- Increase public awareness on climate change

Q7. What are the most significant challenges that you face?

Please rank each challenge:

0: Not challenging at all - I face minimal challenges
1: Slightly challenging - my challenges are manageable with existing resources
2: Neutral
3: Somewhat challenging - I face significant challenges that require high level of efforts and resources
4: Extremely challenging - I face major obstacle to progress

Challenges You Face	**0**	**1**	**2**	**3**	**4**
High energy bills	●	●	●	●	●
Substandard housing conditions (e.g. old roof, lack of or inefficient AC, old windows, etc.)	●	●	●	●	●
Lack of access to reliable, convenient, safe, and	●	●	●	●	●

affordable public transportation or mobility options					
Distance between where I live and work (commuting time/distance)	●	●	●	●	●
Unable to afford a newer/more reliable vehicle	●	●	●	●	●
Lack of access to green spaces (e.g., parks and natural areas)	●	●	●	●	●
Exposure to air pollution (e.g., air that is not clean, smoke)	●	●	●	●	●
Living close to a major roadway, industrial facility, wastewater treatment facility, landfill, brownfield	●	●	●	●	●
Lack of reliable/consistent trash/waste and recycling options	●	●	●	●	●
Lack of access to good paying jobs	●	●	●	●	●
Exposure to extreme heat	●	●	●	●	●
Exposure to flooding	●	●	●	●	●
Lack of trees that can provide shade	●	●	●	●	●
Health related challenges (e.g., asthma, high blood pressure)	●	●	●	●	●
Other: _____	●	●	●	●	●

For Q8-Q14, we are asking you what you see as priorities and benefits related to each transportation, housing and other services.

Q8. Transportation - Please rate how important each of the items below is to you:	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
Reducing the distance between where I live and work (commute time/distance)	●	●	●	●	●
Improved sidewalks (street lighting, tree canopy) would increase the	●	●	●	●	●

number of places I would walk or go to					
More rideshare options that serve my community (e.g. uber/lyft)	●	●	●	●	●
More vanpool options that serve my community (e.g. carpool options that save costs)	●	●	●	●	●
More connection from public transit to where I live and/or work	●	●	●	●	●
Safe and accessible bike routes	●	●	●	●	●
More bike storage facilities	●	●	●	●	●
More shaded and/or covered bus stops/stations would increase my use of public transit	●	●	●	●	●
More affordable bus fares	●	●	●	●	●
More efficient bus options (faster, more reliable, improved routes etc.)	●	●	●	●	●
More affordable train/metrorail	●	●	●	●	●
More efficient train/metrorail (faster, more reliable, improved routes, etc).	●	●	●	●	●
Financial incentives for newer/more reliable vehicle	●	●	●	●	●
Financial incentives for electric vehicles	●	●	●	●	●
More electric vehicle charging stations where I live/work/play	●	●	●	●	●
Financial incentives for electric vehicle charging at home	●	●	●	●	●
Other: _____	●	●	●	●	●

Q9. Benefits to you if the above service priorities related to transportation from Q8 are addressed:	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
Having access to reliable and affordable public transportation	●	●	●	●	●
Having cleaner air where I live/work/play	●	●	●	●	●
Creating new job opportunities	●	●	●	●	●
Protecting the environment, including water sources, biodiversity (e.g., forest, trees, birds), and other	●	●	●	●	●
Increasing community awareness of strategies for reducing greenhouse gases	●	●	●	●	●
Increasing my community's resilience to storms, heat, and flooding	●	●	●	●	●
Reducing greenhouse gas emissions that warm the planet	●	●	●	●	●
Having more reliable power	●	●	●	●	●
Improved health (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy)	●	●	●	●	●
Increased access to services/amenities in mycommunity	●	●	●	●	●
Community beautification	●	●	●	●	●
Other_____	●	●	●	●	●

Q10. Housing - Please rate how important each of the items below is to you:	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
Financial incentives to support	●	●	●	●	●

upgrading appliances (e.g. energy-efficient refrigerators, washer/dryer, stoves), electronics (e.g. smart thermostats), lighting (e.g. LED light bulbs)					
Financial incentives to upgrade your air conditioning (AC) unit to a more efficient model	●	●	●	●	●
Financial incentives to improve housing condition (e.g., new roof, windows, insulation)	●	●	●	●	●
Financial improvements to upgrade to solar water heaters to decrease energy costs related to heating water	●	●	●	●	●
More trees around where I live/work to provide cooling	●	●	●	●	●
Financial incentives to install rooftop solar panels	●	●	●	●	●
Other: _____	●	●	●	●	●

Q11. Benefits to you if the above service priorities related to housing from Q10 are addressed:	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
Having cleaner air where I live/work/play	●	●	●	●	●
Creating new job opportunities	●	●	●	●	●
Lowering energy costs/utility bills	●	●	●	●	●
Protecting the environment, including water sources, biodiversity (e.g., forest, trees, birds), and other	●	●	●	●	●
Increasing green space	●	●	●	●	●

Increasing community awareness of strategies for reducing greenhouse gases	●	●	●	●	●
Increasing my community's resilience to storms, heat, and flooding	●	●	●	●	●
Reducing greenhouse gas emissions that warm the planet	●	●	●	●	●
Having more reliable power	●	●	●	●	●
Improved health (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy)	●	●	●	●	●
Increased housing quality, comfort, and safety	●	●	●	●	●
Community beautification	●	●	●	●	●
Other_____	●	●	●	●	●

Q12. Other Priorities - Please rate how important each of the items below is to you:	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
More education regarding recycling programs	●	●	●	●	●
More reliable trash/waste and recycling services	●	●	●	●	●
More composting programs in community(ies)	●	●	●	●	●
Reducing air pollution from commercial/industrial activities/facilities near residential communities (e.g., ports, airports, landfills, wastewater treatment facilities, energy generation facilities etc.)	●	●	●	●	●
Increasing the amount of greenspaces and natural areas (e.g., forested lands,	●	●	●	●	●

coastal habits, wetlands and mangroves etc.)					
Improvements to make agriculture more sustainable	●	●	●	●	●
Other: _____	●	●	●	●	●

Q13. Additional benefits to you if the above other service priorities from Q12 are addressed:	**1 Extremely Important**	**2 Moderately Important**	**3 Neutral**	**4 Slightly Important**	**5 Not Important At All**
Having cleaner air where community residents live/work/play	●	●	●	●	●
Creating new job opportunities	●	●	●	●	●
Lowering energy costs/utility bills	●	●	●	●	●
Protecting the environment, including water sources, biodiversity (e.g., forest, trees, birds), and other	●	●	●	●	●
Increasing green space	●	●	●	●	●
Increasing community awareness of strategies for reducing greenhouse gases	●	●	●	●	●
Increasing my community's resilience to storms, heat, and flooding	●	●	●	●	●
Reducing greenhouse gas emissions that warm the planet	●	●	●	●	●
Having more reliable power	●	●	●	●	●
Improved health (e.g., decreased risk of asthma, diabetes, heart disease, low life expectancy)	●	●	●	●	●
Increased housing quality, comfort, and safety	●	●	●	●	●
Community beautification	●	●	●	●	●

Other_____	●	●	●	●	●

Q14. How long have you lived in Southeast Florida?

- Less than a year
- 1 year - 3 years
- 4 years -7 years
- 7 years -10 years
- 10+ years

Q15. What is the average income of your household?

- Less than $25,000/ year
- $25,000- $49,000 a year
- $50,000- $74,999 a year
- $75,000- $99,999
- $100,000 +

Q16. Which of the following describes your living status?

- Renter
- Homeowner
- Other_____

Q17. What is the highest level of education you have completed?

- Less than a high shool diploma
- High school diploma or equivalent (GED)
- Trade or technical School
- Some college, no degree
- Associate degree (AA, AS)
- Bachelor's degree (BA, BS)
- Master’s degree (MS, MPH, MEd)
- Doctorate or Professional degree (e.g. PhD, EdD, MD, JD)
- Prefer not to say

Q18. What is your ethnicity?

- Hispanic, Latino or of Spanish Origin
- Not Hispanic, Not Latino nor of Spanish Origin
- Other
- Prefer not to say

Q19. What is your race?

- Black
- African American
- American Indian or Alaska Native
- Native Hawaiian or Pacific Islander

- White
- Other
- Prefer not to say

Q20. What is your current employment status

- Employed full time (40 or more hours per week)
- Employed part time (up to 39 hours per week)
- Unemployed and currently looking for work
- Unemployed and not currently looking for work
- Student
- Retired
- Homemaker
- Self-employed
- Unable to work

Q21. Which language(s) are you more comfortable speaking in? (select all that apply)

- English
- Spanish
- Haitian Creole
- Portuguese
- French
- Other_____
- Prefer not to say

Note:
Upon completion of the online survey, respondents receives confirmation of completing survey with the following information:

"Thank you for taking the time to complete this survey. We'd like to invite you to a webinar to be held in January 2024 where we will share the findings of this survey. If you are interested in participating, please complete this form.

Name_____
Email_____

Appendix 5

Overall Qualitative LIDAC Benefits Analysis Matrix

Overall Qualitative Benefits Matrix

	Benefits:	Reducing co-pollutants (ozone, PM2.5 and hazardous air pollutants)	Creating new job opportunities	Lowering energy costs/utility bills	Protecting the environment, including water sources, biodiversity (e., forest, trees, birds and other)	Increasing green space	Increasing community awareness of strategies for reducing greenhouse gases	Increasing community resilience to climate change (storms, heat, flooding)	Reducing GHG emissions	Having more reliable power	Improved public health (e.g., decreased risk of asthma, reduction in hospital admissions)	Increased housing quality, comfort, and safety	Community beautification	Improved access to services and amenities	Increased access to transportation alternatives
Measure #	**Description**														
R-01	Heat Pump or High Efficiency AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
R-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
R-03	LED Lighting	X	X	X			X		X		X	X	X		
R-04	Enclosure Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
R-05	Window, door, and skylight replacement with assessment	X	X	X			X		X		X	X	X		
R-06	Efficient Appliances and Plug Load Management	X	X	X			X		X		X	X			
R-07	Heat Pump DHW	X	X	X			X		X		X	X			
R-08	Solar Hot Water Heater	X	X	X			X		X		X	X			
R-09	Smart Thermostats	X	X	X			X	X	X		X	X			
C-01	Heat Pump or High Efficiency AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
C-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
C-03	LED Lighting	X	X	X			X		X		X	X	X		
C-04	Enclosure Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
C-05	Smart Thermostats	X	X	X			X	X	X		X	X			
RCT-01	2MW solar grid	X	X	X			X	X	X	X	X	X			
RCT-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
RCT-03	Enclosure Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
RT-01	Newly planned community home expansions	X	X	X			X	X	X		X	X	X		
T-01	Agency Fleet Decarbonization	X	X				X		X		X				
T-02	Agency Fleet Decarbonization	X	X				X	X	X		X			X	X
T-03	Public EV Charging Infrastructure	X	X				X	X	X		X			X	X
T-04	Efficient Port Operations	X	X		X		X		X						
T-05	Reduce Roadway Vehicle Miles Traveled - Increase Transit Ridership	X	X		X		X	X	X		X		X	X	X
T-06	Reduce Roadway Vehicle Miles Traveled - Active Transportation, Complete Street Programs	X	X		X		X	X	X		X		X	X	X
TT-01	Decarbonized & Decolonized Food System	X	X				X		X		X			X	
TT-02	Decarbonized & Decolonized Food System	X	X				X		X		X				
WM-01	Sustainable Management of Food	X			X		X		X				X		
A-01	Sustainable Agriculture	X			X		X		X		X				
A-02	Reforestation	X	X		X	X	X	X	X		X		X		

Appendix 6

Qualitative LIDAC Benefits Analysis Matrix by County

Miami-Dade County Qualitative Benefits Matrix

	Benefits:	Reducing co-pollutants (ozone, PM2.5 and hazardous air pollutants)	Creating new job opportunities	Lowering energy costs/utility bills	Protecting the environment, including water sources, biodiversity (e., forest, trees, birds and other)	Increasing green space	Increasing community awareness of strategies to reduce GHG	Increasing community resilience to climate change (storms, heat, flooding)	Reducing GHG emissions	Having more reliable power	Improved public health (e.g., decreased risk of asthma, reduction in hospital admissions)	Increased housing quality, comfort, and safety	Community beautification	Improved access to services and amenities	Increased access to transportation alternatives
Measure Code	**Category Description**														
R-01	Heat Pump or High Efficeiny AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
R-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
R-03	LED Lighting	X	X	X			X		X		X	X	X		
R-04	Enclousre Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
R-05	Window, door, and skylight replacement with assessment	X	X	X			X		X		X	X	X		
R-06	Efficient Appliances and Plug Load Management	X	X	X			X		X		X	X			
R-07	Heat Pump DHW	X	X	X			X		X		X	X			
R-08	Solar Hot Water Heater	X	X	X			X		X		X	X			
R-09	Smart Thermostats	X	X	X			X	X	X		X	X			
C-01	Heat Pump or High Efficeiny AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
C-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
C-03	LED Lighting	X	X	X			X		X		X	X	X		
C-04	Enclousre Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
C-05	Smart Thermostats	X	X	X			X	X	X		X	X			
T-01	Agency Fleet Decarbonization	X	X				X		X		X				
T-02	Agency Fleet Decarbonization	X	X				X	X	X		X			X	X
T-03	Public EV Charging Infrastructure	X	X				X	X	X		X			X	X
T-04	Efficient Port Operations	X	X		X		X		X						
T-05	Reduce Roadway Vehicle Miles Traveled - Increase Transit Ridership	X	X		X		X	X	X		X		X	X	X
T-06	Reduce Roadway Vehicle Miles Traveled - Active Transportation, Complete Street Programs	X	X		X		X	X	X		X		X	X	X
WM-01	Sustainable Management of Food	X			X		X		X				X		
	Key	**High Priority**	**Medium Priority**	**Low Priority**	**Not Applicable**										

Broward County Qualitative Benefits Matrix

	Benefits:	Reducing co-pollutants (ozone, PM2.5 and hazardous air pollutants)	Creating new job opportunities	Lowering energy costs/utility bills	Protecting the environment, including water sources, biodiversity (e., forest, trees, birds and other)	Increasing green space	Increasing community awareness of strategies to reduce GHG emissions	Increasing community resilience to climate change (storms, heat, flooding)	Reducing GHG emissions	Having more reliable power	Improved public health (e.g., decreased risk of asthma, reduction in hospital admissions)	Increased housing quality, comfort, and safety	Community beautification	Improved access to services and amenities	Increased access to transportation alternatives
Measure Code	**Category Description**														
R-01	Heat Pump or High Efficeiny AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
R-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
R-03	LED Lighting	X	X	X			X		X		X	X	X		
R-04	Enclousre Upgrades (with roof assessments)	X	x	X			X	X	X		X	X	X		
R-05	Window, door, and skylight replacement with assessment	X	x	X			X		X		X	X	X		
R-06	Efficient Appliances and Plug Load Management	X	x	X			X		X		X	X			
R-07	Heat Pump DHW	X	x	X			X		X		X	X			
R-08	Solar Hot Water Heater	X	x	X			X		X		X	X			
R-09	Smart Thermostats	X	x	X			X	X	X		X	X			
C-01	Heat Pump or High Efficeiny AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
C-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
C-03	LED Lighting	X	x	X			X		X		X	X	X		
C-04	Enclousre Upgrades (with roof assessments)	X	x	X			X	X	X		X	X	X		
C-05	Smart Thermostats	X	x	X			X	X	X		X	X			
T-01	Agency Fleet Decarbonization	X	X				X		X		X				
T-02	Agency Fleet Decarbonization	X	X				X	X	X		X			X	X
T-03	Public EV Charging Infrastructure	X	X				X	X	X		X			X	X
T-04	Efficient Port Operations	X	X		X		X		X						
T-06	Reduce Roadway Vehicle Miles Traveled - Active Transportation, Complete Street Programs	X	X		X		X	X	X		X		X	X	X
	Key	**High Priority**	**Medium Priority**	**Low Priority**	**Not Applicable**										

Palm Beach County Qualitative Benefits Matrix

	Benefits :	Reducing co-pollutants (ozone, PM2.5 and hazardous air pollutants)	Creating new job opportunities	Lowering energy costs/utility bills	Protecting the environment, including water sources, biodiversity (e., forest, trees, birds and other)	Increasing green space	Increasing community awareness of strategies to reduce GHG emissions	Increasing community resilience to climate change (storms, heat, flooding)	Reducing GHG emissions	Having more reliable power	Improved public health (e.g., decreased risk of asthma, reduction in hospital admissions)	Increased housing quality, comfort, and safety	Community beautification	Improved access to services and amenities	Increased access to transportation alternatives
Measure	**Category Description**														
R-01	Heat Pump or High Efficeiny AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
R-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
R-03	LED Lighting	X	X	X			X		X		X	X	X		
R-04	Enclousre Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
R-05	Window, door, and skylight replacement with assessment	X	X	X			X		X		X	X	X		
R-06	Efficient Appliances and Plug Load Management	X	X	X			X		X		X	X			
R-07	Heat Pump DHW	X	X	X			X		X		X	X			
R-08	Solar Hot Water Heater	X	X	X			X		X		X	X			
R-09	Smart Thermostats	X	X	X			X	X	X		X	X			
C-01	Heat Pump or High Efficeiny AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
C-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
C-03	LED Lighting	X	X	X			X		X		X	X	X		
C-04	Enclousre Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
C-05	Smart Thermostats	X	X	X			X	X	X		X	X			
T-01	Agency Fleet Decarbonization	X	X				X		X		X				
T-02	Agency Fleet Decarbonization	X	X				X	X	X		X			X	X
T-03	Public EV Charging Infrastructure	X	X				X	X	X		X			X	X
T-06	Reduce Roadway Vehicle Miles Traveled - Active Transportation, Complete Street Programs	X	X		X		X	X	X		X		X	X	X
	Key	**High Priority**	**Medium Priority**	**Low Priority**	**Not Applicable**										

Monroe County Qualitative Benefits Matrix

	Benefits :	Reducing co-pollutants (ozone, PM2.5 and hazardous air pollutants)	Creating new job opportunities	Lowering energy costs/utility bills	Protecting the environment, including water sources, biodiversity (e., forest, trees, birds and other)	Increasing green space	Increasing community awareness of strategies to reduce GHG emissions	Increasing community resilience to climate change (storms, heat, flooding)	Reducing GHG emissions	Having more reliable power	Improved public health (e.g., decreased risk of asthma, reduction in hospital admissions)	Increased housing quality, comfort, and safety	Community beautification	Improved access to services and amenities	Increased access to transportation alternatives
Measure	**Category Description**														
R-01	Heat Pump or High Efficeiny AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
R-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
R-03	LED Lighting	X	X	X			X		X		X	X	X		
R-04	Enclousre Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
R-05	Window, door, and skylight replacement with assessment	X	X	X			X		X		X	X	X		
R-06	Efficient Appliances and Plug Load Management	X	X	X			X		X		X	X			
R-07	Heat Pump DHW	X	X	X			X		X		X	X			
R-08	Solar Hot Water Heater	X	X	X			X		X		X	X			
R-09	Smart Thermostats	X	X	X			X	X	X		X	X			
C-01	Heat Pump or High Efficeiny AC Retrofits and Commissioning	X	X	X			X	X	X		X	X			
C-02	Solar Photovoltaics (PV)	X	X	X			X	X	X	X	X	X			
C-03	LED Lighting	X	X	X			X		X		X	X	X		
C-04	Enclousre Upgrades (with roof assessments)	X	X	X			X	X	X		X	X	X		
C-05	Smart Thermostats	X	X	X			X	X	X		X	X			
T-01	Agency Fleet Decarbonization	X	X				X		X		X				
T-02	Agency Fleet Decarbonization	X	X				X	X	X		X			X	X
T-03	Public EV Charging Infrastructure	X	X				X	X	X		X			X	X
T-05	Reduce Roadway Vehicle Miles Traveled - Increase Transit Ridership	X	X		X		X	X	X		X		X	X	X
T-06	Reduce Roadway Vehicle Miles Traveled - Active Transportation, Complete Street Programs	X	X		X		X	X	X		X		X	X	X
	Key	**High Priority**	**Medium Priority**	**Low Priority**	**Not Applicable**										

Appendix 7

Methods of Quantifying Benefits to LIDAC

Methods of Quantifying Benefits to Low Income/Disadvantaged Communities

Estimated co-pollutant reduction from residential and commercial sector measures

For the measures in the residential sector and commercial sector (R-01-R09, C01-C05, & RCT-01), impacts on co-pollutant reduction were estimated by using the AVoided Emissions and geneRation Tool (AVERT) v4.2 developed by EPA. For each measure, the estimated annual electricity consumption reduction (MWh) was used as an input parameter to estimate the annual co-pollutant reduction in the four counties in the Southeast Florida (i.e. Broward, Miami-Dade, Monroe, and Palm Beach). For the three measures on solar PV installation (R-02, C-02, and RCT01), the installed solar PV (MW) was used as the input parameter instead. The co-pollutants include: SO2, NOx, PM 2.5, and VOCs. The percentage of the LIDAC population in these four counties was used as a weight to estimate the co-pollutant reduction benefits for LIDACs in the region. Using the 2020 US Census data (U.S. Census Bureau, 2020), the percentage of LIDAC population = 3,299,107/6,221,207=53%. Thus, the co-pollutant benefits for LIDACs = Annual regional co-pollutant reduction in the Southeast Florida * 53%.

Estimated co-pollutant reduction from transportation sector measures

For Agency Fleet Decarbonization (T-01), the annual co-pollutant reduction was estimated by using the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) developed by Argonne National Laboratory. Co-pollutant reductions in the transportation sector include SOx, NOx, PM2.5, VOCs, and CO. As for exchanging the diesel and gasoline vehicles to EVs, the annual co-pollutant emissions (lb) per vehicle was calculated when using the current combustion engine and then how the fleet decarbonization efforts, such as using electric vehicles like passenger cars, school buses, and transit buses, can reduce these emissions was estimated. By considering the estimated emission of co-pollutants based on vehicle type, such as Gasoline, Diesel, EV, LPG, CNG, and LNG, a comparison between each engine and estimated co-pollutant emission differences by the engine system was developed. The emission reduction from replacing each type of fossil fuel vehicles was multiplied by the number of vehicles replaced in each category to get the total co-pollutant reductions. Measuring benefits towards the LIDACs was developed by weighting the percentage of LIDAC population at the county level using the 2020 US census data (U.S. Census Bureau, 2020), and an estimated annual reduction of co-pollutants across the LIDACs was derived. For the weights at the county level, the calculation of the LIDAC population percentages as 41.76% for Broward County, 71.02% for Miami-Dade County, 33.66% for Monroe County, and 36.21% for Palm Beach County.

For Efficient Port Operation (T-04), the annual co-pollutant reduction was estimated by using AFLEET and emission factor from Evaluating Emission Benefits of a Hybrid Tug Boat. For emission reduction for the port operation, co-pollutant estimation includes NOx and pm2.5. As for co-pollutant emission reduction from exchanging diesel tug boat to hybrid tug boat, we extracted the amount of annual emission of hybrid tug boat from diesel tug boat to get the reduction of emission. The annual operating hours of 1400 hour per year was then multiplied to get the total reduced amount of co-pollutant emission. As for hybrid and Electric Cargo Equipment, AFLEET was used to calculate the co-pollutant emission reduction. The amount of annual emission of electric terminal tracter emission factor was extracted from diesel terminal tracter emission factor to get the reduction on emission. The number of yard tractors per year was then multiplied to get the total reduced amount of co-pollutant emission. Measuring benefits towards the LIDACs was developed by weighting the percentage of LIDAC population at the county level using the 2020 US census data (U.S. Census Bureau, 2020), and then an estimated annual reduction of co-pollutants across the LIDACs was derived. As for weighting T-04 based on the target area for calculating benefit of

LIDACs from co-pollutant reduction, the target areas are Miami-Dade and Broward County. Therefore, LIDACs percentages 71.02% for Miami-Dade County and 41.76% for Broward County were multiplied for each co-pollutant.

For reducing roadway Vehicle Miles Traveled (VMT) by increasing Transit Ridership (T-05), the annual co-pollutant reduction was estimated by using the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET). According to Drive alone mode share from 2019 Modal Split Analysis, % of commuters driving alone during the weekdays is 76.8%. Moreover, their length of commuting miles based on the National average from FHWA CMAQ Toolkit is 4.52 miles. Annual VMT displaced is calculated based on these numbers. By reducing the number of drivers driving alone and increasing the number of boarders on public transportation, co-pollutant reduced from the annual VMT displaced is calculated respectively for SOx, NOx, PM2.5, VOCs, and CO. The emission factor per mile was multiplied by the amount of annual VMT reduced for each co-pollutant. Since the effort to reduce emission from transportation is specifically beneficial to the target area, weights were given to the % of LIDACs at the county level to get the reduction amount more accurately. As for T-05, the target areas are Miami-Dade, Monroe County. Therefore, LIDACs percentages 71.02% for Miami-Dade County and 33.66% for Monroe County were multiplied for each co-pollutant.

For reducing roadway Vehicle Miles Traveled (VMT) by Active Transportation and complete Street Programs (T-06), the annual co-pollutant reduction was estimated by referring to the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET). Emission factors per mile were estimated for each co-pollutant from the amount of annual VMT reduced from promoting people to walk more than driving and using vehicles. Since the effort to reduce emission from transportation is specifically beneficial to the target area, weights were given to the % of LIDACs at the county level to get the reduction amount more accurately. As for T-06, the target area is all 4 counties including Sovereign Tribal Nation. Therefore, for the weights at the county level, the calculation of the LIDAC population percentages as 41.76% for Broward County, 71.02% for Miami-Dade County, 33.66% for Monroe County, and 36.21% for Palm Beach County. There is no additional percentage multiplied for two tribes because they are classified as LIDACs for 100%.

For zero emissions vehicle for food and grocery delivery (vehicle) (TT-01), the annual co-pollutant reduction was estimated by referring to the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET). The emission factors were multiplied by the amount of co-pollutant reduced when delivery truck fueled with diesel and gasoline exchanged to zero emission trucks respectively. Then the reduced amounts of co-pollutant were added together to get the total emission reduction benefit.

As for zero emissions mobile trailer slaughterhouse & mobile meat processing station (TT-02), the annual co-pollutant reduction was estimated by referring to the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET). The emission factors were multiplied by the miles of annual diesel VMT reduced. Then the reduced amounts of co-pollutant were added together to get the total emission reduction benefit.