

CLEAN AIR NORTHEAST FLORIDA

REGIONAL PRIORITY

CLIMATE ACTION PLAN

APRIL 2024



CLEAN AIR NORTHEAST
FLORIDA
REGIONAL CLIMATE ACTION PLAN





Scan For Digital Report
cleanairnortheastflorida.com



Cover Photo Credit: Dan Reynolds Photography

*Clean Air Northeast Florida Regional Priority
Climate Action Plan
March 2024*

ACKNOWLEDGMENTS

The Priority Climate Action Plan lays the framework to combat climate change and its impacts in Northeast Florida by measuring, planning, and reducing greenhouse gas (GHG) emissions and related climatic impacts in the region. None of this would have been possible without the significant contributions in time, energy, and thought of many. We would like to sincerely thank the groups and individuals listed below for their support and contributions to the plan.

CLEAN AIR NORTHEAST FLORIDA STEERING COMMITTEE

Ashantae Green, Sustainability Manager, City of Jacksonville

James Richardson, EPB Program Administrator, City of Jacksonville

Judy Holm, Fuse Fellow, City of Jacksonville

Carly Smith, Sustainability Aide, City of Jacksonville

Naomi Braff, Community Rating System Coordinator, Nassau County

Westly Woodward, Principal Resiliency Planning Analyst, St. Johns County

Maeven Rogers, Sustainability and Resiliency Officer, City of Palm Coast

Elizabeth Johnson, Sustainability Specialist, City of St. Augustine

Christine Roken, Office Manager, Clay County

HANSON PROFESSIONAL SERVICES, INC.

Steve Alm, PE, LEED AP

Christa Barsanti

Bill Bradford, PE,

Burns Bradford, PE

Mathew Coalson, CEM

Wade Conlan, PE, CxA, BCxP, LEED AP

Tad Gass, PG

Kalvin Kwan

Michelle Paul

Amanda Polematidis, PE, CxA, LEED AP BD+C

Griffin Reilly

Mark Scott, PE

Mandi Tucker

An Vo

Ross Volenec

Michelle Paul

Amanda Polematidis, PE, CxA, LEED AP BD+C

ADDITIONAL WRITTEN CONTRIBUTIONS PROVIDED BY THE CLIMATE ACTION PLAN TEAM

Sarah Boren, MEM, LEED AP BD+C, Homes, and LEED for Cities and Communities Pro, Together Sustainable

Erin Deady, PA, Erin Deady Law

Cantrece Jones, Acuity Design Group, Inc.

SPECIFIC CONTRIBUTIONS AND SUPPORT

Fara Ilami, MS, PMP, NEFRC

Andrew Prokopiak, NEFRC

PARTNERS

Northeast Florida Regional Council
Crowley
Duval County Public Schools
Goodwill Industries of North Florida
Florida State College of Jacksonville
ICLEI
Fuse Corps
JaxUSA
JEA
Jacksonville Transit Authority
Jacksonville Port Authority
North Florida Transportation Planning Organization
Miller Electric
University of North Florida
Urban Sustainability Directors Network
Southeast Sustainability Directors Network

Subject Matter Expert (SME) Panelists

Darren Eakins, Alstom Rail Signaling
Dave McKee, JEA
Shannel Davis-Bryant, Sage Growth Solutions
Ben Moore, Reynolds, Smith & Hills
Josh Gellers
Ph.D., University of North Florida
Nikita Reed, City of Jacksonville
Miles Keogh
National Association of Clear Air Agencies
Americus Spencer-Harold
Spencer Constriction & Engineering
Melissa Long, City of Jacksonville
Alexander Traversa
Jacksonville Transportation Authority
Brian Matthews, City of Palm Coast
Bill Updike, Smart Surfaces Coalition

Northeast Florida Regional Council Working Group Members

Larry Arceneaux
Ian LaHiff
Sarah Reed
Christa Barsanti
Charlie Latham
Lori Ann Santamaria
Doug Conkey
Dave McKee
Lauren Scott
Megan Covey
Charlie Latham
Lisa Sterling
Kelsey Cox
Dave McKee
Sam Sullivan
Kay Ehas
Mark McManus
Angela TenBroeck
Tad Gass
Arne Olsen
Todd Grant
Doug Peeters
Folks Huxford
Sarah Reed
Lori Ann Santamaria
Lauren Scott
Lisa Sterling
Sam Sullivan
Angela TenBroeck

Non-Governmental Organizations (NGOs) and Community Groups



TABLE OF CONTENTS

- ABBREVIATIONS AND ACRONYMS7**
- LIST OF FIGURES8**
- LIST OF TABLES10**
- EXECUTIVE SUMMARY12**
- I. INTRODUCTION.....13**
- II. GREENHOUSE GAS EMISSIONS INVENTORY15**
- III. PRIORITY MEASURES19**
- IV. LOW INCOME AND DISADVANTAGED COMMUNITY (LIDAC) BENEFIT ANALYSIS 62**
- IV. COORDINATION AND OUTREACH77**
- CONCLUSION 84**

ABBREVIATIONS AND ACRONYMS

Abbreviations and Acronyms	Definition
AFOLU	Agriculture, Forestry, and Other Land Use
BAU	Business as Usual
BLTS	Bicycle Level of Traffic Stress
CAPs	Criteria Air Pollutants
CCAP	Comprehensive Climate Action Plan
CEJST	Climate and Economic Justice Screening Tool
CH ₄	Methane
CIP	Capital Improvement Plan
CLAM	Conservation Lands Acquisition and Management
CNG	Compressed Natural Gas
CO ₂	Carbon Dioxide
COAB	City of Atlantic Beach
COJ	City of Jacksonville
CPRG	Climate Pollution Reduction Grant
DCPS	Duval County Public Schools
DERs	Distributed Energy Resources
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
EVs	Electric Vehicles
F.A.C.	Florida Administrative Code
FDOT	Florida Department of Transportation
FEECA	Florida Energy Efficiency and Conservation Act
F-gases	Fluorinated gases
FLIGHT	Facility Level Information on GHGs Tool
FPL	Florida Power and Light
FPUC	Florida Public Utilities Company
FY	Fiscal Year
GEI	Google's Environmental Insights
GHGs	Greenhouse Gases
GPC	Global Protocol for Community-Scale
HAPs	Hazardous Air Pollutants
HFCs	Hydrofluorocarbons
ICC	International Code Council
ICE	Internal Combustion Engine
IOUs	Investor-Owned Utilities
JAXPORT	Jacksonville Port Authority
JEA	Jacksonville Electric Authority
JTA	Jacksonville Transportation Authority
kWh	Kilowatt Hour
LEED	Leadership in Energy and Environmental Design

LFG	Landfill Gas
LIDACs	Low-Income and Disadvantaged Communities
LGGIT	EPA's Local GHG Inventory Tool
MARPOL	International Convention for the Prevention of Pollution from Ships
MSAs	Metropolitan Statistical Areas
MSW	Municipal Solid Waste
mtCO ² e	Metric Tons of Carbon Dioxide Equivalent
MW	Megawatts
MWh	Megawatt Hour
NEFL	Northeast Florida
NEFRC	Northeast Florida Regional Council
NF3	Nitrogen Trifluoride
NOAA	National Oceanic and Atmospheric Administration
N ₂ O	Nitrous Oxide
NREL	National Renewable Energy Laboratory
OUC	Orlando Utilities Commission
P-ACBs	Permeable Articulating Concrete Blocks
PCAP	Priority Climate Action Plan
PSC	Florida Public Service Commission
RFLPP	Rural and Family Lands Protection Program
RMP	Risk Management Plan
RNG	Renewable Natural Gas
SF ₆	Sulfur Hexafluoride
SLOPE	State and Local Planning for Energy
SME	Subject Matter Expert
SO ₂	Sulfur Dioxide
SSO	Sanitary Sewer Overflow
UNF	University of North Florida
TECO	Tampa Electric Company
TPO	Transportation Planning Organization
UPWP	Unified Planning Work Program

LIST OF FIGURES

Figure 1 Geographic Scope of the Northeast Florida MSA.....	13
Figure 2 NEFL GHG Emissions by Sector	18
Figure 3 JAXPORT Crowley 2019 GHG Emissions by Mode of Transportation, in lbs. CO2e / Ton-Mile	41
Figure 4 Climate and Economic Justice mapping of NEFL	55
Figure 5 Baker, Nassau, Duval, Clay, and St. Johns Counties LIDAC Communities	55
Figure 6 City of Palm Coast LIDAC Communities (in Dark Green and Yellow)	55
Figure 7 Duval County Acute Shocks and Chronic Stresse	60
Figure 8 Kids Hope Alliance Community Engagement event on 2/22/2024	78

LIST OF TABLES

Table 1 NEFL GHG Emissions in mtCO ₂ e by Sector	12
Table 2 NEFL 2019 GHG Emissions in mtCO ₂ e by Sector and County.....	17
Table 3 NEFL PCAP Priority Measures	21
Table 4 GHG Emissions Projections, in mtCO ₂ e, for Residential and Commercial Electrical Usage	26
Table 5 GHG Emissions Projections, in mtCO ₂ e, for Residential and Commercial.....	27
Table 6 GHG Emissions Projections, in mtCO ₂ e, for Municipal Solar Expansion	28
Table 7 GHG Emissions Projections, in mtCO ₂ e, for Municipal and Educational Building Decarbonization...	30
Table 8 GHG Emissions Projections, in mtCO ₂ e, for Municipal and Educational Building Decarbonization....	31
Table 9 Cumulative GHG Emissions Reduction, in mtCO ₂ e for the Transportation Sector GHG Reduction Strategies.....	40
Table 10 Emissions Reduction by Phase, in mtCO ₂ e.....	43
Table 11 Cumulative GHG Emissions Reduction, in mtCO ₂ e, for the City of Palm Coast Wastewater Efficiency Strategy.....	46
Table 12 Cumulative GHG Emissions Reduction, in mtCO ₂ e, for the Municipal Composting GHG Reduction Strategies.....	48
Table 13 Cumulative GHG Emissions Reduction, in mtCO ₂ e, for the Transportation Sector GHG Reduction Strategies.....	50
Table 14 GHG Emissions Reduction, in mtCO ₂ e, for Nassau County Land Use and Development.....	52
Table 15 Number of People Affected with a Disadvantaged Burden Addressed by a Proposed Measure(s) ..	56
Table 16 Priority Measures and Their Affected LIDAC Census Tracts	63
Table 17 Community Outreach Events	83

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Priority Climate Action Plan (PCAP) is a vital initial step in the journey toward sustainable environmental management, specifically tailored to Northeast Florida’s unique context. As the inaugural deliverable to the United States Environmental Protection Agency (EPA) under the planning grant phase of Phase 1, the PCAP is a comprehensive narrative report. This report meticulously outlines a range of near-term, high-impact, implementation-ready actions to reduce greenhouse gases. Furthermore, it incorporates a detailed quantitative analysis of the expected reductions in greenhouse gases because of these actions.

Table 1 details all economic sectors' total NEFL GHG emissions in metric tons of carbon dioxide equivalents (mtCO₂e).

TABLE 1 NEFL GHG Emissions in mtCO₂e by Sector

Sector	GHG Emissions, mtCO ₂ e
Transportation	7,372,833
Industry	1,905,683
Agriculture, Forestry, and Other Land Use	1,561,181
Residential	3,662,179
Commercial	3,861,188
Waste and Wastewater	709,861
Total	18,402,469
SECTORS	GREENHOUSE GASES ACROSS ALL SECTORS
Transportation and Mile Sources Electricity Generation and/or Use Agriculture, Forestry, and Other Land Use Industrial Solid Waste and Wastewater Commercial and Residential Buildings Nitrogen Trifluoride (NF₃)	Carbon Dioxide (CO₂) Methane (CH₄) Nitrous Oxide (N₂O) Fluorinated Gases (F-gases), including: Hydrofluorocarbons (PFCs) Sulfur Hexafluoride (SF₆)

I. INTRODUCTION

Climate change presents an unprecedented challenge and opportunity for our region. As we stand at the crossroads of environmental uncertainty and technological advancement, the urgency to act has never been greater. The current state of our planet is a clear signal that the time for delay is over. The hazards and risks associated with inaction grow more daunting each day, threatening our communities, economies, and ecosystems with extreme weather events, rising sea levels, and devastating natural disasters. These challenges disproportionately impact the most vulnerable among us, laying bare the stark inequalities that pervade our societies.

In the face of these challenges, a profound opportunity exists to reshape our community for the better. We have the tools, the knowledge, and the collective will to implement greenhouse gas (GHG) reduction strategies that are not only effective but also equitable. By prioritizing actions that reduce emissions and enhance resilience, we can create a sustainable, just, and prosperous future for all. Our vision is clear: a world where progress and sustainability go hand in hand, where no one is left behind in the transition to a decarbonized economy. This is not just a vision; it is a necessity, a moral imperative that we must pursue with determination and hope. The time to act is now, and every step we take towards this goal brings us closer to a safer, healthier, and more equitable Northeast Florida region for future generations.

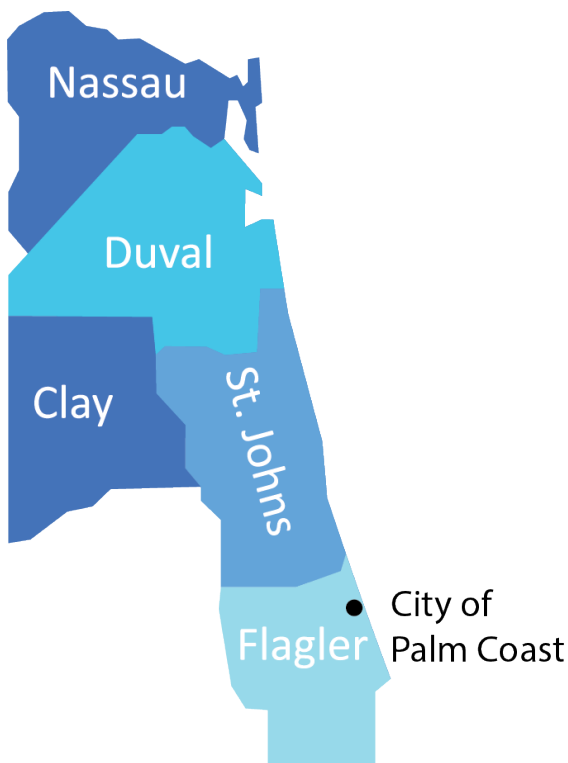


FIGURE 1

GEOGRAPHIC SCOPE OF NORTHEAST FLORIDA MSA

This creation of a Priority Climate Action Plan is a step forward in the Jacksonville Metropolitan Statistical Area (MSA). Made possible through a \$1 million Non-competitive planning grant award through the EPA Climate Pollution Reduction Grants Program (CPRG). This four-year program emphasizes equity and regional collaboration across the MSA. The MSA is comprised of, Duval, Clay, St. Johns, Nassau Counties and the City of Palm Coast with deep collaboration with cities of Jacksonville, St. Augustine and Atlantic Beach.

Located in Northeast Florida, Jacksonville MSA is uniquely positioned to leverage the resources of the EPA’s Climate Pollution Reduction Grant as momentum in regional sustainability and resilience leadership to accelerate positive change. As the lead entity, the City of Jacksonville is the largest city (by land mass) in the contiguous United States and largest municipality in the region. Jacksonville’s current administration remains committed to championing significant actions to bring Jacksonville and the Northeast Florida region forward to mitigate climate impacts and adapt to climate change as quickly as possible, through sustainability and climate resilience measures.

The commitment is similar for the surrounding counties and cities comprising the MSA region, as seen with the onboarding of professional staff and city funded investments in sustainability and resilience measures. Funding through the CPRG has catalyzed current actions to accelerate efforts and propel the northeast Florida region to new and unprecedented levels. There are several major milestones in the region that are important to highlight regarding the alignment and synchronization with the goals of the CPRG:

- St Augustine hired a Chief Resiliency Officer in 2019
- The City of Jacksonville hired its first-ever Chief Resilience Officer in 2021, and published a comprehensive resilience plan “Resilient Jacksonville” in October 2023
- The City of Atlantic Beach Awarded LEED for Cities Gold Certification in 2022
- The City of Palm Coast hired its first-ever Chief Sustainability and Resiliency Officer in 2023
- The City of Jacksonville hired its first-ever Sustainability Manager in 2023
- St. Augustine hired its first-ever Sustainability Specialist in 2023
- St. Augustine hired a Chief Resiliency Officer in 2021
- The first-ever MSA-wide baseline GHG inventory was conducted and completed in January 2024
- Clean Air Northeast Florida Incentive was established in 2023 to serve as a regional resource for climate and sustainability information, collaboration, and action. The www.cleanairnortheastflorida.com website launched in February 2024.

As the grantee to the EPA’s Climate Pollution Reduction Act Planning Grant, the City of Jacksonville has partnered with the Northeast Florida Regional Council to produce this PCAP to support investment in policies, practices, and technologies that reduce pollutant emissions, create high-quality jobs, spur economic growth, and enhance the quality of life in Northeast Florida. This project, a historic first for the area, has been funded by the EPA. 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.

The measures contained herein should be construed as broadly available to any entity within the geographic scope of this PCAP eligible to receive funding under the EPA’s CPRG Implementation Grant General Competition and other funding streams, as applicable.

This PCAP is organized into six sections:

1. Introduction
2. Greenhouse Gas (GHG) Emissions Inventory
3. Priority Measures
4. Low-Income/Disadvantaged Community Benefits Analysis
5. Coordination and Outreach
6. Conclusion



GREENHOUSE GAS EMISSIONS INVENTORY

II. GREENHOUSE GAS EMISSIONS INVENTORY

Hanson Professional Services has developed an inventory of priority sources of GHG emissions within the Northeast Florida region. This data is built upon the governmental inventories that the Audubon Society worked to develop with each participating municipality. This inventory was prepared using the following data resource(s):

- EPA’s Local GHG Inventory Tool (LGGIT)¹,
- Facility-specific GHG data published by the EPA in the Facility Level Information on Greenhouse Gases Tool (FLIGHT)²,
- Data reported to the EPA’s Greenhouse Gas Reporting Program³
- EPA’s National Emissions Inventory⁴
- United States Department of Energy State and Local Planning for Energy (SLOPE) Platform⁵
- The World Resources Institute and World Business Council for Sustainable Development Global Protocol for Community-Scale (GPC) Greenhouse Gas Inventories⁶
- Data reported in the United States Census Bureau’s data tables:
 - American Community Survey⁷
 - County Business Patterns⁸
- Data reported in the United States Energy Information Administration’s State Profile and Energy Estimates⁹
- Google’s Environmental Insights Platform¹⁰
- Florida’s Department of Environmental Protection Report for MSW Management¹¹
- Census data from the USDA National Agricultural Statistics Service¹²

The NEFL inventory includes the following sectors and gases:

SECTORS

Transportation

Industry

Agriculture

Residential

Commercial

Solid Waste and Wastewater

GREENHOUSE GASES (ACROSS ALL SECTORS)

Carbon Dioxide (CO₂)

Methane (CH₄)

Nitrous Oxide (N₂O)

Fluorinated Gases (F-gases), including:

Hydrofluorocarbons (HFCs)

Sulfur Hexafluoride (SF₆)

Nitrogen Trifluoride (NF₃)

1. <https://www.epa.gov/statelocalenergy/local-greenhouse-gas-inventory-tool>

2. <https://ghgdata.epa.gov/ghgp/main.do>

3. <https://www.epa.gov/ghgreporting/data-sets>

4. <https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei>

5. <https://maps.nrel.gov/slope>

6. <https://ghgprotocol.org/ghg-protocol-cities>

7. <https://data.census.gov/table?q=S1101andy=2019>

8. <https://data.census.gov/table?q=CBP2019.CB1900CBP>

9. <https://www.eia.gov/state/data.php?sid=FL>

10. <https://insights.sustainability.google/>

11. https://floridadep.gov/sites/default/files/Baker_2019.pdf

12. <https://www.nass.usda.gov/Publications/AgCensus/2017/>

Table 2 details total Northeast Florida MSA GHG emissions in metric tons of carbon dioxide equivalents (mtCO₂e) for all economic sectors and counties.

TABLE 2 NEFL 2019 GHG Emissions in mtCO₂e by Sector and County

SECTOR/COUNTY	SECTOR/COUNTY
<u>Transportation</u>	<u>7,372,833</u>
Baker County	249,443
Clay County	820,095
Duval County	3,287,934
Nassau County	761,343
City of Palm Coast	549,889
St. Johns County	1,704,129
<u>Industry</u>	<u>1,905,683</u>
Baker County	-
Clay County	-
Duval County	553,406
Nassau County	681,821
City of Palm Coast	-
St. Johns County	-
<u>Agriculture, Forestry, and Other Land Use</u>	<u>890,725</u>
Baker County	285,494
Clay County	131,536
Duval County	191,016
Nassau County	307,075
City of Palm Coast	17,590
St. Johns County	628,480
<u>Residential</u>	<u>3,662,179</u>
Baker County	53,863
Clay County	517,480
Duval County	2,300,950
Nassau County	158,659
City of Palm Coast	164,072
St. Johns County	467,155
<u>Commercial</u>	<u>3,861,188</u>
Baker County	29,557
Clay County	313,212
Duval County	2,996,265
Nassau County	104,750
City of Palm Coast	62,097
St. Johns County	355,307
<u>Solid Waste and Wastewater¹³</u>	<u>709,861</u>
Baker County	5,949
Clay County	113,792
Duval County	360,442
Nassau County	23,277
City of Palm Coast	9,538 + 9628
St. Johns County	187,225

The following list highlights which sectors and counties will need the most focused reductions:

Residential and Commercial Buildings: Collectively, residential and commercial buildings are the largest contributors to GHG emissions in Northeast Florida, making up 41% of the sector-based inventory. This is primarily due to the high volume of residents and businesses in Duval County. Neighboring counties such as Clay and St. Johns also significantly contribute to emissions in this sector.

Transportation: Transportation is the second-largest contributor of GHG emissions after residential and commercial buildings. It makes up 40% of the sector-based inventory. Out of the regions analyzed, Duval and St. Johns Counties contribute the most due to high gasoline and diesel use.

Agriculture, Forestry, and Land: The agriculture, forestry, and land sectors comprise 8% of all GHG emissions. This is primarily due to more rural counties like St. Johns, Nassau, and Baker. A significant factor in this sector is the conversion of forests to settlements, grasslands, or wetlands.

Industry: The next largest contributor to GHG emissions is the industry sector, which makes up 7% of all emissions. All industrial activities take place in Duval County and Nassau County. The emissions from this sector include, but are not limited to, natural gas, oil, agricultural byproducts, and wood residuals.

Waste and Materials Management: Solid waste is the smallest percentage of GHG emissions at 4%. This is highest in counties with many residents or an active tourism industry.

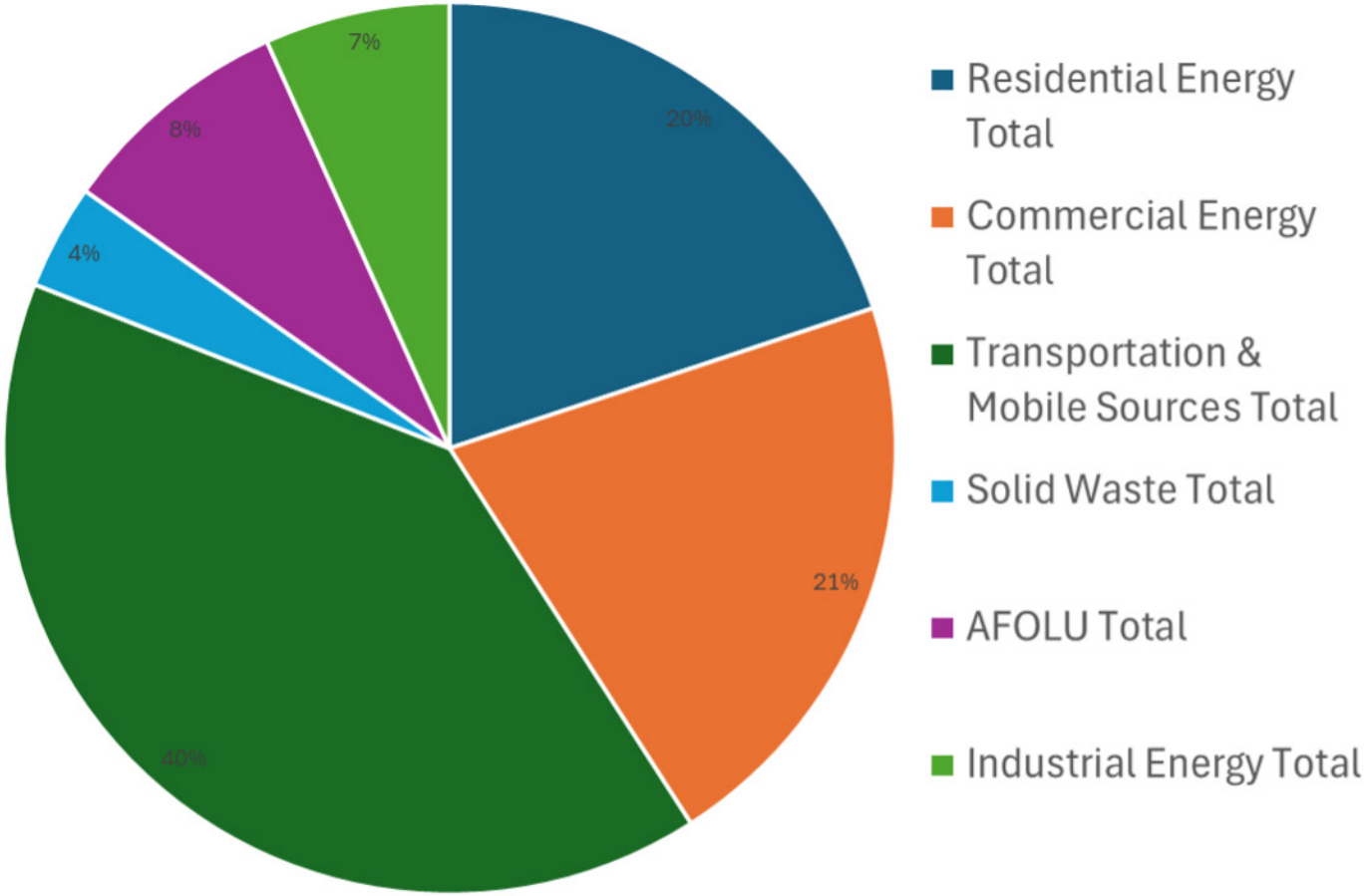
The residential, commercial, and transportation sectors account for 81% of emissions. Duval County contributes 45% of transportation emissions and 70% of residential and commercial emissions within these sectors. After Duval, St. Johns County has the second-highest emissions in these sectors.

This inventory is the basis for determining what reduction measures should be implemented to impact GHG emissions significantly.

13. Wastewater for Palm Coast, FL only

FIGURE 2

NEFL GHG Emissions by Sector



PRIORITY MEASURES

III. PRIORITY MEASURES

The measures in this section have been identified as “priority measures” for the purposes of pursuing funding through CPRG implementation grants. This list is not exhaustive of Northeast Florida’s priorities. Instead, the selected priority measures included in this PCAP meet the following criteria:

- The measure is implementation-ready, meaning that the design work for the policy, program, or project is complete enough that a full scope of work and budget can be included in a CPRG implementation grant application.
- The measure can be completed in the near term, meaning that all funds will be expended, and the project completed within the five-year performance period for the CPRG implementation grants.
- The measure positively impacts low-income and disadvantaged (LIDAC) communities.
- The measure advances the following priorities:
 - Significant and sustained emission reductions,
 - Maximizing reach to the entire MSA, and
 - Public health.

Table 3 on the following page summarizes NEFL PCAP priority measures. Based on the GHG emissions inventory, commercial and residential buildings and transportation are the highest contributing categories. Therefore, most measures address those sectors.

For each priority measure, this PCAP provides additional details about the following information

- An estimate of the cumulative GHG emission reductions from 2025 through 2030,
- An estimate of the cumulative GHG emission reductions from 2025 through 2050,
- Geographic scope,
- Metrics for tracking progress,
- Authority to implement,
- Benefits, Methods and assumptions.



Table 3 NEFL PCAP Priority Measures

Priority Measure	Cumulative GHG Emission Reductions (mtCO ₂ e)		Implementing Agency or Agencies	Geographic Scope
	2030	2050		
Electrical Grid				
Increase Clean Energy	0.59 mtCO ₂ e per capita	0.57 mtCO ₂ e per capita	Regional Utility Providers	MSA-wide
Residential and Commercial Buildings				
Residential Solar and Energy Efficiency Programs	46,260	231,304	NEFL MSA Leads	MSA-wide
Municipal Solar Expansion	434,600	1,885,000	NEFL MSA Leads	MSA-wide
Municipal Built Environment and Infrastructure Decarbonization	34,109	57,109	City of Jacksonville, City of Atlantic Beach, City of St. Augustine	3 Cities
Transportation				
North Florida TPO's Clean Fuels Initiative	72,345	482,297	North Florida's TPO, JEA, JTA, COJ, City of St. Augustine, Nassau County, St. Johns County	3 Counties
Mass Transit Expansion and Mobility Hubs, assuming 15% conversion per year	102,000	3,200,000	Jacksonville Transit Authority	5 Counties
City of Jacksonville Bicycle and Pedestrian Programs	7,695	38,475	City of Jacksonville	1 City
Fleet Transition to Electric Vehicles (EV) per 1,000 vehicles	1,000	187,000	Nassau County, City of St. Augustine, City of Jacksonville, City of Atlantic Beach, Duval County Public Schools	1 County and 3 Cities

Priority Measure	Cumulative GHG Emission Reductions (mtCO ₂ e)		Implementing Agency or Agencies	Geographic Scope
	2030	2050		
Agriculture, Forestry, and Land				
Increase Clean Energy	0.59 mtCO ₂ e per capita	0.57 mtCO ₂ e per capita	Regional Utility Providers	MSA-wide
Residential and Commercial Buildings				
Land Acquisition	46,060	46,061	Nassau County, City St. Augustine	MSA-wide
Industrial				
Green Shipping Corridor	19,468	34,157	JAXPORT	1 City
Waste and Materials Management				
Wastewater Treatment Efficiency Upgrades	215.5	933.8	City of Palm Coast	Palm Coast
Composting and Waste Diversion (50% adoption rate)	365,507	1,583,865	City of Jacksonville, City of Atlantic Beach, City of St. Augustine	3 Cities
Landfill Gas Recovery and Conversion	1,802,220	9,011,100	City of Jacksonville	1 City

ELECTRICAL GRID

Before diving into the increasing clean energy measure, it is important to note Florida's unique statewide vertically integrated electricity. The Florida Public Service Commission (PSC)¹⁴, an arm of the legislative branch of government, only permits one electricity provider in any region and oversees that only legally defined utilities are allowed to create, transmit, distribute, and sell electricity within the state. There are pros and cons to this system including on the positive side providing a safe, adequate, and reliable grid yet on the downside, not incentivizing innovation and competition (e.g., virtual power purchase agreements, community solar, solar leasing, microgrids and blockchain).

The following provides a summary of utilities regulation in Florida pertinent to several of the measures discussed herein. The role of the PSC is to ensure Florida's consumers receive utility services, including electric, natural gas, telephone, water, and wastewater, in a safe, affordable, and reliable manner. To do so, the PSC exercises authority over public utilities in one or more of the following areas: rate base or economic regulation; competitive market oversight; and monitoring of safety, reliability, and service issues. The PSC monitors the safety and reliability of the electric power grid and may order the addition or repair of infrastructure as necessary.

The PSC has broad jurisdiction over the rates and services of investor-owned electric and gas utilities. However, the PSC does not fully regulate municipal electric utilities (utilities owned or operated on behalf of a municipality) or rural electric cooperatives. The PSC has jurisdiction over these types of utilities

regarding rate structure, territorial boundaries, bulk power supply operations, and planning. Municipally owned utility rates and revenues are regulated by their respective local governments. Section 366.041(2), F.S., requires public utilities to provide adequate service to customers. As compensation for fulfilling that obligation, s. 366.06, F.S., requires the PSC to allow the investor-owned utilities (IOUs) to recover honestly and prudently invested costs of providing service, including investments in infrastructure and operating expenses used to provide electric service.

In 1980, Florida enacted the Florida Energy Efficiency and Conservation Act (FEECA), requiring the PSC to review the conservation goals of each utility. In 2014, the PSC approved new numerical conservation goals for seven utilities subject to FEECA, scheduling demand reductions for each utility based on a cost-effectiveness methodology. Utilities subject to FEECA include Florida Power and Light Company; Duke Energy Florida, LLC; Tampa Electric Company, Florida Public Utilities Company; JEA; and Orlando Utilities Commission. FEECA goals for electric utilities were last established by the PSC in 2019 for 2020-2024. Commissioners directed rule review following approval of utility programs to implement the goals in 2020. The Legislature adopted FEECA to promote four key priorities:

- Reducing the growth rates of weather-sensitive peak demand and electricity usage
- Increasing the efficiency of the production and consumption of electricity and natural gas
- Encouraging demand-side renewable energy systems
- Conserving expensive resources, particularly petroleum fuel

14. <https://www.psc.state.fl.us>

The Legislature emphasized the critical need to utilize “efficient and cost-effective” conservation systems. The Legislature set forth in Section 366.82, F.S., specific statutory guidelines for the PSC to implement FEECA’s objectives through the establishment of utility conservation goals and approval of utility plans to meet those goals.

Chapter 186, F.S., requires that each electric utility in Florida, with a minimum existing generating capacity of 250 megawatts (MW), must annually submit a Ten-Year Power Plant Site Plan. This Site Plan should include an estimate of the utility’s future electric power generating needs, a projection of how these estimated generating needs could be met, and disclosure of information pertaining to the utility’s preferred and potential power plant sites. Ten Year Site Plans are submitted to the PSC pursuant to Section 186.801, F.S. describing power needs and locations of proposed power plants. Within nine months of receipt of those plans, the PSC must make a preliminary study and classify the plan as “suitable” or “unsuitable,” and can suggest alternatives. Utilities can change their Site Plans at any time and submit written notice to the PSC. These Site Plans reflect the utilities’ plans for their grid to meet demand through various energy sources.

Clean Energy Increase by Local Utility Companies

Description

Within NEFL, three utility providers have been identified as interested in providing more clean energy to their customers: Florida Power and Light (FPL), Jacksonville Electric Authority (JEA), and Clay Electric Cooperative. To reduce GHG emissions, utility companies across the region have developed strategies to increase clean energy. This includes escalating solar and wind power supply while considering increased electricity demand due to population increases over time.

- FPL, a subsidiary of Juno Beach, Florida-based NextEra Energy, Inc., primarily serves Baker County, Nassau County, St. Johns County, and Palm Coast City. According to the NextEra Zero Carbon Blueprint, between 2005 and 2019, FPL has decreased its reliance on non-renewable energy sources by 58%¹⁵. Looking ahead, FPL has set ambitious goals: by 2030, it aims to power its electric grid with 82% clean energy. Furthermore, by 2050, FPL aspires to achieve the milestone of using 100% clean energy for its electric grid.

- JEA, which provides services to Duval County (minus a few small cities such as the City of Neptune Beach and Jacksonville Beach), has set some more tempered goals for itself. Per the JEA 2023 Electric Generation Integrated Resource Plan, by the year 2030, JEA aims to expand its power supply portfolio to 35% clean energy¹⁶. However, with population growth and anticipated EV expansion through 2050, JEA’s projected current outlook still includes possible investments into natural gas systems in addition to increased solar and nuclear power.
- Other regional utilities, including Florida Public Utilities, Beaches Energy, and Clay Electric Cooperative, offer various energy-saving and environmentally friendly resources.

Impact

Grid decarbonization will have several impacts on the community, covering economic, health, environmental, and social aspects. It can lead to economic growth through the creation of green jobs in clean energy. This can include jobs in manufacturing, installation, and maintenance, contributing to the local economy and reducing unemployment rates. Reduced reliance on fossil fuels and lowering greenhouse gas emissions can lead to improved public health outcomes, including reductions in air pollution, which can decrease the prevalence of respiratory illnesses, heart conditions, and other health issues related to poor air quality. Grid decarbonization can help communities become more resilient to the impacts of climate change, putting communities in a better position to withstand extreme weather events. Renewable energy, when accessible to low-income households, can promote social equity by ensuring that clean energy benefits are shared across all segments of the community. Energy security can be enhanced through the reduced dependency on imported fuels. By transitioning to locally sourced clean energy, communities can be more self-sufficient, less vulnerable to global market fluctuations, and more resilient in the face of energy supply disruptions. There are also several innovation and education opportunities in the move to increased clean energy; communities can be hubs for clean energy research and development, and educational programs can prepare the workforce for the new green economy.

15. [NEER-124_120522_ZCB_SHARED_FCB_08_17_22_Studio_v1.pdf\(nexteraenergy.com\)](#)

16. https://www.jea.com/About/JEA_2023_Electric_Integrated_Resource_Plan/

Implementation

Jacksonville Electric Authority (JEA)

Clean Energy Sources: JEA is exploring clean energy options including solar, lithium battery storage, biomass, hydrogen, and nuclear options.

Schedule & Milestones: Part of JEA's implementation plan highlights opportunities with solar, residential rooftop solar PV, and battery storage installations. JEA has examined within three other planning scenarios 5% of their residential load to be met by rooftop PV by 2030, although it is not in their Current Outlook scenario. JEA carried out a solar siting study to assess potential sites for developing approximately 4,000 MW of new solar assets. This would require 24,000-32,000 acres of land. Florida is mostly flat which is an ideal ground condition for solar development, but the state does pose high flood risk and has lots of forested areas. As a result of this study, 101 potential sites throughout the state have been identified with the following favorable conditions: 200 or more acres, transmission lines within 1 mile, slopes of 15% or less, no seismic activity concerns, medium to low risk of natural disasters, and more.

The expansion of customer-cited residential and commercial solar battery storage was explored for its potential to reduce load. According to their estimates, this would reduce up to 690,000 MWh of cumulative load by 2050. Gasification of woody biomass through bubbling fluidized beds is a mentioned renewable energy source. The biomass would be forest residues that could replace the Northside 1 and 2 source fuels of coal and petroleum coke. Unlike coal and petroleum coke, which are finite fossil fuels, biomass can be replenished over time, making it a more sustainable option, as it can be continuously produced and used without depleting natural resources.

Funding: Solar and solar storage options require capital costs for solar technology, land, installation, engineering, and more. They also require yearly operation and maintenance costs or long-term major maintenance costs. JEA expects these costs to decrease over time due to technology and construction advances, external contributions, and funding that will substantially accelerate implementation.

Metrics for Tracking Progress: JEA currently has several outlook scenarios for their near-term, mid-term, and long-term build plans. These scenarios represent possible futures for JEA while recognizing the fluidity of future conditions. The net-zero scenario outlines a building plan through 2051 and outlines the amount of solar and solar storage to be implemented yearly to achieve net zero by 2050. Time

for transmission planning, land acquisition, and permitting are all processes considered.



Taking the goal

of net zero into account with these limiting factors, a year-by-year plan can be developed to calculate GHG reductions, make predictions, and continue to develop their year-by-year Current Outlook and plan future goals. It is recommended that JEA more clearly subcategorizes energy generation from solar PV and battery into the following: residential customer-sited, commercial customer-sited, and JEA-owned solar PV and battery storage installations.

Regarding the incorporation of biomass into Northside 1 and 2, it is recommended that JEA continues to report on its land acquisitions, new solar developments, and the energy output of existing PV mass of biomass compared to coal and petroleum coke and quantify power generation among its combustion plants and tracks the energy generation output among its fuel sources. An added metric to consider are the reductions of other emissions by reducing the amount of coal and petroleum coke, which have greater emissions of SO₂, NO_x, VOCs, and NH₃ compared to that of woody biomass.

Authority to Implement: A municipal electric utility is an electric utility system owned and/or operated by a municipality engaged in serving residential, commercial, and/or industrial customers, usually within the boundaries of the municipality. Municipally owned utility rates and revenues are regulated by their city commission. Most municipal electric utilities are represented by the Florida Municipal Electric Association. JEA¹⁷ owns and operates an Electric System with four generating plants and all transmission and distribution facilities, including 744 circuit miles of transmission lines and 7,336 miles of distribution lines. The governing body is made up of a seven-member board of directors appointed by Jacksonville's mayor and confirmed by the Jacksonville City Council. As a community-owned utility, JEA is not subject to the same state regulations as investor-owned utilities, but it is regulated in certain areas of environmental and health matters, power plant location, electric safety, and electric rate structure matters. The Local Ordinance controls JEA's planning processes and procedures to operate.

17. Code of Ordinances section regarding the creation of JEA, Article 21, Jacksonville Code of Ordinances: https://library.municode.com/fl/jacksonville/codes/code_of_ordinances?nodeId=CHRELA_PTACHLACHJAFI_ART21JE



Renewable Energy Sources: FPL plans to modernize their generation fleet with state-of-the-art natural gas units. The next step is to deploy solar in most parts of FPL’s service area. As of late 2021, FPL had approximately 3,164 MW of solar generation capacity and expects to have 12,626 MW by 2031. FPL is also looking to incorporate low-cost battery energy storage, hydrogen fuel cell storage, and expand nuclear power plants.

Schedule & Milestones: FPL current has 60 solar power plants and one of the world’s largest solar-powered batteries. Like JEA, they are looking to expand their plants and recommend residential rooftop solar PV to their customers. FPL has meaningful milestones in five-year increments to track the progress of achieving net zero by 2050. FPL’s five-year goals are as follows: 65% reduction by 2025, 77% reduction by 2030, 83% reduction by 2035, 92% reduction by 2040, and 100% reduction by 2045

Funding: Over the past decade, NextEra Energy has invested approximately \$110 billion in infrastructure capital deployment across the U.S. They are working with FPL to fund the infrastructure required to achieve net zero carbon emissions in NEFL by 2050.

Metrics for Tracking Progress: FPL tracks service reliability metrics and power plant availability metrics. Reliability metrics will help provide a strong and resilient energy grid despite frequent storms. These metrics, along with tracking emissions over time, will help determine if FPL is on track for a net zero goal by 2050.

Authority to Implement: Investor-owned utilities serve over 70% of Florida’s electric consumers. Most of Florida’s solar generation is currently large-scale scale, although the number of rooftop systems has been increasing. While Florida does not have a Renewable Portfolio Standard or allow Power Purchase Agreements, two policies attributed to facilitating more widespread solar development, large utility-scale solar development has been on the rise. Florida utilities also have individual energy efficiency goals set by the PSC. Generally, FPL operations are conducted according to its Ten-Year Site Planning process, and they are regulated by Florida Statutes and the PSC.

Benefits

- **GHG Reduction:** Table 4 shows projected commercial and residential GHG emissions in mtCO₂e for 2030 and 2050. These values were forecasted based on the GHG inventory and the decarbonization plans of FPL and JEA. This forecast indicates that FPL’s Zero Carbon Blueprint would positively impact GHG emissions for these sectors. However, Clay County and Duval County experienced an increase in GHG emissions over time due to increased population paired with no decarbonization plan from their utility provider.
- **Biomass Landfill Diversion:** The combustion of biomass by JEA can be considered carbon neutral as long as the biomass is sourced sustainably, and plants are replanted to absorb CO₂ equal to what is emitted. Furthermore, if the biomass is waste material that was diverted from the landfill, this not only helps in managing waste but also turns it into a valuable energy source. Bubbling fluidized bed systems using biomass typically produce lower levels of harmful emissions compared to burning coal or petroleum coke, as biomass will produce fewer SO₂ and NOx emissions.

Table 4 GHG Emissions Projections, in mtCO₂e, for Residential and Commercial Electrical Usage

County	2019	2030	2050
Baker	83,420	33,900	0
Clay	830,694	3,320,078	3,791,019
Duval	5,297,213	5,129,389	7,061,974
Nassau	263,407	124,512	0
City of Palm Coast	226,169	109,246	0
St. Johns	822,464	446,635	0

Residential Energy Efficiency and Solar Expansion

Northeast Florida is committed to reducing GHG emissions throughout the region by expanding residential energy efficiency programs, education, toolkits, and increased access to energy efficiency upgrades. Energy efficiency education and tools will include energy efficiency workshops for community members to learn resource-saving strategies. Workshops will be held in disadvantaged communities in trusted public facilities that are easily accessible by the community. The program will provide efficiency Tool kits that may include energy audit equipment, energy and water efficiency devices, and educational materials, and education materials at libraries, community centers, city halls, and other trusted locations.

Schedule and Milestones: Assuming the following distribution of energy toolkits, based on population, a utilization rate of 50% every two weeks, and a residential energy reduction of 5% per household, we can estimate a regional GHG reduction of 46,260 mtCO₂e through 2030 and 231,304 mtCO₂e through 2050 ¹⁸.

Table 5 GHG Emissions Projections, in mtCO₂e, for Residential and Commercial

Location	Population	Number of EE Toolkits	Household Checkouts/Year	Energy Reduction, kWh	Average CO ₂ Reduction per Year	2030	2050
Baker	28,263	70	0	219,588	66.2	331	1,656
Clay	219,252	280	3,791,019	878,350	265.0	1,325	6,625
Duval	995,560	1,260	7,061,974	11,857,728	7,529.7	37,648	188,241
Nassau	88,625	280	0	2,635,051	795.0	3,975	19,875
City of Palm Coast	87,696	70	0	219,588	66.2	331	1,656
St. Johns	264,672	280	0	1,756,700	530.0	2,650	13,250

Impact: Residents may be unaware of changes they can make to improve their energy efficiency and therefore lower their utility bills. Similarly, workshops for community members can further educate on how to increase efficiency. This is especially important in lower-income communities to promote more affordable energy options. Residential energy upgrades, such as improved insulation, energy-efficient appliances, and LED lighting, can complement solar energy systems by reducing overall energy consumption. These upgrades can significantly decrease the amount of electricity required from the grid, leading to further reductions in energy bills and enhancing the cost-effectiveness of solar installations. While there is an initial investment, the combined savings on energy bills can quickly offset the upfront costs, leading to substantial savings over time. Energy upgrades can improve comfort in homes by maintaining more consistent indoor temperatures and reducing drafts. This improves the living environment for residents and can lead to healthier and more comfortable living spaces. Widespread residential energy upgrades can lead to a reduction in the overall energy demand within the community. This can lessen the strain on the local power grid, especially during peak usage times, contributing to a more stable and reliable energy supply for the entire community.

18. [Energy Data Facts | Residential Program Guide](#)

Residential solar energy expansion contributes to greater energy independence for the community. By producing energy locally at the community scale, residents can reduce their vulnerability to external energy price fluctuations and supply disruptions, leading to a more stable and secure energy supply. Solar energy can enhance community resilience, especially in the face of power outages and natural disasters. Homes with solar panels, particularly those equipped with battery storage systems, can maintain power during grid failures, providing crucial energy security.

Homes equipped with energy-efficient upgrades, like high-efficiency HVAC systems or double-paned windows, and solar energy systems often experience an increase in property values. Solar installations are viewed as upgrades, similar to renovations, which can make properties more attractive to potential buyers and contribute to the overall economic health of the community.

Funding

There is wide availability of various incentives, rebates, and financing options for homeowners looking to implement solar energy systems and energy efficiency upgrades. One easy-to-search database can be found at: www.dsireusa.org listing over 40 incentives for downtown Jacksonville from JEA’s residential and commercial energy efficiency rebates to the IRS’s Residential Renewable Energy Investment Tax Credit. These programs can help make residential energy improvements more accessible to a wider range of community members, encouraging broader participation and engagement.

Table 6 GHG Emissions Projections, in mtCO₂e, for Municipal Solar Expansion

Municipal Solar Expansion	Average CO₂ Reduction per Year	2030	2050
Community Facility EE and Solar upgrades (per facility)	9,900 – 16,400	59,000 - 98,400	257,400 – 426,400
Large Scale Solar (per 1MW installation)	62,600	375,600	1,627,600

Metrics: For this measure, participating community centers will monitor household checkouts per year and incentivize user feedback on their energy bill reduction and subsequent home energy efficiency improvements that resulted from their initial self-performed energy audit.

LIDAC Impact

Improving community centers can have a large impact on communities. Having efficient and reliable high-performing centers to build community resiliency is especially important in locations that are prone to natural disasters. Incorporating solar to community centers can decrease energy costs, which can allow nonprofit programs at the community centers to reinvest in their programming for community members. The potential for solar energy expansion can improve social equity. Initiatives like solar projects can offer clean energy benefits to a broader range of residents, including renters and those without ideal roof conditions for solar panels, ensuring that all community members have access to renewable energy and its benefits. This can allow more funding to be allotted to other community-related improvements. Furthermore, converting to solar in community centers and other locations across counties can improve the health of residents living in the area due to lower GHG emissions.

Authority to Implement

Rule 25-17.0021, F.A.C., Goals for Electric Utilities, implements the PSC's statutory mandate to adopt goals for electric utilities, approve utility plans, and collect periodic reports from utilities related to promoting efficiency and conservation of electric energy as provided in Sections 366.80-366.83 and 403.519, F.S., together as FEECA. FEECA emphasizes reducing the growth rates of weather-sensitive peak demand, reducing and controlling the growth rates of

electricity consumption, and reducing the consumption of scarce resources, such as petroleum fuels. The PSC is required by FEECA to establish numeric conservation goals at least once every five years for utilities subject to FEECA. The utilities are required to develop plans and programs to reach those goals and submit them for approval by the Commission. The six electric utilities currently subject to FEECA are Florida Power and Light Company (FPL), Duke Energy Florida, LLC (Duke), Tampa Electric Company (TECO), Florida Public Utilities Company (FPUC), JEA, and Orlando Utilities Commission (OUC).

The PSC's interconnection and net metering rule (Rule 25-6.065, F.A.C.) promotes the development of customer-sited renewable generation by establishing a billing mechanism that allows customers to offset their usage through self-generating energy. Any excess energy delivered to the grid is applied as a kilowatt-hour credit to the customer's monthly energy usage. Since the rule's adoption in 2008, the number of renewable systems has increased from 577 to 189,952 interconnections. Florida's IOUs—Florida Power and Light Company; Duke Energy Florida, LLC; Tampa Electric Company; and Florida Public Utilities—are required by the rule to offer an expedited interconnection agreement process so that homeowners and businesses can generate their own energy quickly and safely. Municipal electric utilities and rural electric cooperatives are also required, by statute, to provide a standardized interconnection agreement and net metering program for customer-sited renewable generation systems



MUNICIPAL BUILT ENVIRONMENT DECARBONIZATION

Buildings

In the region, our local governments can additionally lead by example by committing to reduce the embodied carbon in infrastructure and energy usage of the buildings in their portfolio. To reduce embodied carbon, local governments can prioritize the use of recycled materials and sustainable construction practices, such as modular construction and the reuse of existing structures. Implementing stringent green procurement policies can ensure that materials sourced for new infrastructure or renovations have lower carbon footprints, supporting a circular economy. Additionally, municipalities can invest in life cycle assessments to better understand and minimize the overall environmental impact of their building projects, from material extraction through construction and eventual demolition.

The City of Atlantic Beach, the City of Jacksonville, and the City of St. Augustine are leading the charge of decarbonizing their existing building inventory through regular maintenance of energy systems, retro-commissioning, energy audits, energy efficiency, and optimization upgrades to their building BAS systems, lighting, HVAC, electrical, and plumbing systems. Additionally, the City of Jacksonville has established commitments for new construction of municipal buildings to achieve LEED certification. By focusing on lowering their energy consumption first while maintaining code-required indoor environmental quality, they can also further identify opportunities to offset their energy use by installing on-site renewable energy systems. Similarly, Duval County Public Schools (DCPS) has expressed interest in decarbonizing the public schools within the county.

The City of Jacksonville, the City of Atlantic Beach, and the City of St. Augustine are expected to increase in population, naturally increasing the utility use for municipal buildings. Without a decarbonization plan, all three cities would see increases in electricity use and, thus, carbon emissions. Implementing a decarbonization plan would help cities stabilize their emissions over time or decrease them. DCPS expects a decrease in electricity usage over time, but a decarbonization plan would help them measure their carbon and energy reductions so they can confirm they are on track to achieve their goal, and if not meeting their goal, they could implement measures to reduce their carbon emissions more rapidly.

Schedule & Milestones

Table 7 illustrates the expected operational carbon emissions for the three cities and DCPS from 2019 to 2030 and 2050. This forecast is based on a recommended goal for municipal building energy of 65% reductions by 2030 and 100% reductions by 2050. DCPS has not identified an operational carbon reduction goal, so their estimate was based on 65% reductions by 2030 and 90% reductions by 2050. Their results could improve or worsen by altering this goal. By achieving these reductions, the City of Jacksonville, the City of Atlantic Beach, St. Augustine, and DCPS can expect to dramatically reduce their carbon emissions for municipal and educational buildings in 2050. Other cities or school districts should be able to implement similar plans and achieve comparable decarbonization results.

Table 7 GHG Emissions Projections, in mtCO₂e, for Municipal and Educational Building Decarbonization

Organizations with Decarbonization Strategies	2019	2030	2050
City of Jacksonville	55,434	22,259	589
City of Atlantic Beach	242	96	0
St. Augustine	1,430	1,000	0
Duval County Public Schools	48,071	11,273	2932

Infrastructure

In addition to making improvements on the building side, municipalities can make infrastructure changes. The first measure is Permeable Articulating Concrete Blocks (P-ACBs), or permeable paving. This is an interlocking paver that is engineered to have high stormwater infiltration rates. P-ACBs have higher solar reflectance than traditional asphalt pavement (close to that of conventional concrete) with added stormwater management benefits (and associated energy consumption reductions). Additional benefits of P-ACBs include reduced surface and ambient temperature, reduced air pollution, and reduced energy consumption for surrounding buildings.

Secondly, cool pavement can be a good alternative to using dark asphalt. Cool pavements are engineered to reflect more sunlight than conventional dark asphalt, using coatings, sealants, and reflective particles. The benefits of cool pavements include reduced pavement surface temperature, air pollution, ambient temperatures, and energy consumption for surrounding buildings.

Similarly to P-ACBs and cool pavement, low-carbon concrete for sidewalks can be important in reducing GHG emissions and urban heat. With current and in-development innovations, concrete can be carbon neutral or even carbon negative by upgrading manufacturing processes. The benefits of low-carbon concrete include a reduced carbon footprint and a relatively high albedo, reducing extreme urban heat.

Lastly, green infrastructure such as rain gardens, trees, and bioswales are valuable tools for reducing greenhouse gas emissions and improving public health, pedestrian comfort, and the overall quality of life in cities. The benefits of green infrastructure include a decrease in emissions, pollution, stormwater runoff, and urban heat islands. For example, planting additional trees will help reduce surface temperatures by up to 7°F during the day and 22°F at night. This will lead to an overall lower carbon footprint, in alignment with the region's greenhouse gas reduction goals¹⁹. For the first twenty years of a tree planting, it is assumed that a tree absorbs 10kg of CO₂ per year for the first 20 years²⁰. Mature trees, by contrast, absorb 48 kg of CO₂ per year²¹.

Schedule & Milestones

Table 8 shows the 5-year and 25-year total costs per mtCO₂e reduced for these strategies.

Table 8 GHG Emissions Projections, in mtCO₂e, for Municipal and Educational Building Decarbonization 2030 (5-year plan)

Decarbonization Strategies	2030 (5-year plan)	2050 (25-year plan)
Permeable Articulating Concrete Blocks ²²	83 mtCO ₂ e / 1000 sq ft	418 mtCO ₂ e / 1000 sq ft
Cool Pavements	83 mtCO ₂ e / 1000 sq ft	418 mtCO ₂ e / 1000 sq ft
Green Infrastructure (Rain Gardens) ²³	*	328 mtCO ₂ e / 10,000 sq ft
Green Infrastructure (Trees)	1 mtCO ₂ e / 100 trees annually	4.8mtCO ₂ e / 100 trees annually
*Green infrastructure costs are based on the cost of 10,000 sq ft. of rain garden and 100 trees. Therefore, the cost listed under the 25-year plan can fluctuate depending on the maturity and species of the plantings.		

19. <https://www.americanforests.org/article/american-forests-launches-nationwide-tree-equity-scores/>

20. [How Much CO2 Does A Tree Absorb? - One Tree Planted](#)

21. [Trees Are Climate Change, Carbon Storage Heroes | US Forest Service \(usda.gov\)](#)

22. <https://iopscience.iop.org/article/10.1088/1748-9326/7/2/024004/meta#erl422949fig4>

23. <https://greenvalues.cnt.org/index.php> and <https://www.sciencedirect.com/science/article/abs/pii/S0959652623039641>

Funding

Energy efficiency roadmaps are being incorporated into facility improvement plans by municipal organizations, school districts, and companies throughout the nation, and the listed organizations are no exception. As the return on investment with energy efficiency upgrades provide a relatively quick payback, these roadmaps become self-funded. Several federal grants also exist to support capital improvements should the cost effectiveness to decarbonize be prohibitive, which can be found on the [Funding and Incentives Resource Hub | Better Buildings Initiative \(energy.gov\)](#) website.

In its current state, certain infrastructure decarbonization measures can be expensive and not cost effective due to a myriad of factors, including lack of coordination and goal setting during the schematic design phase, lack of appropriate maintenance, lack of market supply and demand, and its indirect effects on GHG reductions. However, grant programs do exist to support municipalities and spur local and regional market transformation, including [Grant Program: Reducing Embodied Greenhouse Gas Emissions for Construction Materials and Products | US EPA](#) website.

LIDAC Impact

Converting to renewable energy sources will have several positive impacts on communities, especially in low-income areas. Additionally, net-zero buildings will reduce energy consumption. This reduction in consumption will provide savings for residents whose taxes go toward municipal and educational buildings. Jobs can also be created within the renewable energy industry which will help provide career opportunities for those living in the area.

The infrastructure changes will help NEFL experience cooler temperatures, and this will specifically help low-income areas. For example, Jacksonville observed an 11.8°F temperature difference across the city, and many of the hottest areas of the city were observed in some of the more socially vulnerable communities, including Eastside and New Town. About half of the school properties and 60% of afterschool care facilities are in areas highly vulnerable to extreme heat, and 34% of households (30,741 households) with individuals over 65 years old are in highly heat-vulnerable areas. Extreme heat events are the leading cause of weather-related deaths in the U.S. and implementing strategies to cool NEFL will help provide a safer environment for residents.²⁴

Authority to Implement

Generally, these building designs would be controlled by local building code and the Florida Building Code. The Florida Building Code, 8th Edition (2023), was updated by the Florida Building Commission on June 20, 2023, and was adopted as the building code for the State of Florida.

The Florida Building Code draws on national model building codes and consensus standards amended where necessary for Florida's specific needs. The International Code Council (ICC) is an association that develops model codes and standards for the design, building, and compliance process to "construct safe, sustainable, affordable, and resilient structures." The ICC publishes I-Codes: a complete set of comprehensive models, coordinated building safety and fire prevention codes, for all aspects of construction, that have been developed by ICC members. All 50 states have adopted the I-Codes. The Florida Building Code incorporates all building construction-related regulations for public and private buildings in the State of Florida other than those specifically exempted by Section 553.73, F.S. It is harmonized with the Florida Fire Prevention Code, which is developed by the Department of Financial Services, Office of the State Fire Marshall, to establish unified and consistent standards. In addition to providing standardization of the design, construction, and compliance processes, the Code establishes regulations for the safety, health, and general welfare of building occupants as well as for firefighters and emergency responders during building emergencies. Structural strength means of egress, stability, sanitation, adequate light and ventilation, and energy conservation are addressed. As a performance-based code, builders have flexibility in the means and materials they utilize to meet various compliance standards.

24. <https://www.resilientjacksonville.com/resources>

Under some conditions, local governments may amend requirements to be more restrictive than the statewide Code. Any proposed local technical amendments are subject to strict criteria outlined in s. 553.73, F.S., and may not discriminate against materials, products, or construction techniques of demonstrated capabilities. Proposed local amendments are subject to Commission review and adoption into the code or repeal during the triennial update and are subject to appeal to the Commission according to procedures established in s. 553.73, F.S. All local amendments to the Florida Building Code must be adopted by local ordinance and reported to the Florida Building Commission. Without such local technical amendments, some clean energy/green building strategies may be limited to incentive-based regulations such as permit fee waivers, expedited permitting or other strategies.

For any state buildings (each state agency occupying space within buildings owned or managed by the Department of Management Service) located within these jurisdictions, Section 255.257(4) requires the following standards for construction:

- A. Each state agency shall use a sustainable building rating system or a national model green building code for each new building and renovation to an existing building.
- B. No state agency shall enter into new leasing agreements for office space that does not meet Energy Star building standards, except when the appropriate state agency head determines that no other viable or cost-effective alternative exists.
- C. All state agencies shall develop energy conservation measures and guidelines for new and existing office space where state agencies occupy more than 5,000 square feet. These conservation measures shall focus on programs that may reduce energy consumption and, when established, provide a net reduction in occupancy costs.

TRANSPORTATION

The transportation sector is pivotal in addressing climate change challenges in NEFL. Transportation and mobile emissions are the largest single contributor to greenhouse gas emissions in the NEFL region, contributing 40% of the total emissions in the region. This regional PCAP plan identifies specific strategies developed in coordination with the stakeholders in the following counties: Baker, Clay, Duval, Nassau, Orange, and St. John's Counties, as well as the City of Palm Coast. Significant portions are adopted from the JTA and the North Florida TPO in their efforts to mitigate GHG emissions. It focuses on implementing mode shift strategies, commuter rail expansion by the Jacksonville Transit Authority, and North Florida TPO's clean fuels initiative. The carbon emissions related to the Jacksonville International Airport or other Jacksonville Aviation Authority activities were not available by the publication of this PCAP but will be provided for the Clean Air Northeast Florida CCAP in July 2025.

North Florida TPO's Clean Fuels Initiative

Description: The North Florida Transportation Planning Organization seeks to transition public and private fleets in the region to more environmentally friendly fuel sources. The goal is to reduce GHG emissions, decrease reliance on traditional fossil fuels, and foster a sustainable transportation network.

The initiative, as highlighted in the North Florida TPO's Clean Fuels Master Plan²⁵, involves evaluating the potential for incorporating alternative fuels such as CNG, propane (Autogas), electricity, and biofuels into regional stakeholders' fleet operations.

Objective: The initiative examines the operational and economic feasibility of transitioning fleets to clean fuels, considering factors like fuel expenditure, vehicle age, replacement potential, and existing fleet management facilities.

Implementation: The strategy includes setting up the necessary infrastructure for alternative fuels, offering financial incentives for adoption, and conducting outreach to educate stakeholders on the benefits of clean fuel technologies.

Metrics for Tracking Progress: Monitoring alternative fuel usage and the number of alternative fuel vehicles being used in the region will be the best method of tracking progress. This can be achieved by tracking fuel usage from both public and private fueling stations and registrations of alternative fuel vehicles.

Impact and Benefits

Schedule & Milestones: By replacing traditional gasoline and diesel with cleaner alternatives, the initiative aims to significantly reduce the carbon footprint of the region's transportation sector. Through collaboration with participating organizations, the Clean Fuels Coalition supports organizational alternative fuels goal setting and utilizing grant funding and partnerships to develop supporting infrastructure, like biodiesel fueling stations and EV charging for fleets. This measure is estimated to result in a 72,345 mtCO₂e reduction through 2030 and a 482,297 mtCO₂e reduction through 2050.

Economic Viability: Considering current conditions and incentives, the assessment provides a base case scenario demonstrating the economic feasibility of transitioning to clean fuels.

Community Engagement: The initiative involves collaboration with various stakeholders, including city governments, county commissioners, school districts, and transit authorities, to ensure a comprehensive regional approach to clean fuel adoption.

LIDAC Impact: Widespread fossil fuels combustion releases pollutants linked to adverse health effects, including respiratory disorders, cancer, or premature death. Additionally, fossil fuels release carbon dioxide and other greenhouse gases into the atmosphere, contributing to global warming and the rise of sea levels. While everyone is affected by air pollution, low-income communities tend to be more severely impacted because they are more likely to live near facilities that produce pollution, such as landfills, power stations, major roads, and other airborne particulate matter sources. Transitioning to cleaner fuels will improve air quality, mitigate climate change, create jobs, enrich economic development, and reduce transportation costs.

25. https://northfloridatpo.com/uploads/Clean-Fuels-Master-Plan-Report_Final_240209.pdf

Challenges and Funding

- **Infrastructure Development:** A critical step is to establish the required clean fuel infrastructure, which includes setting up fueling stations for CNG and electric vehicles.
- **Financial Planning:** Securing funding and managing costs are central challenges addressed through partnerships with the Florida Department of Environmental Protection and other entities involved in emissions reduction efforts.

Mass Transit Expansion and Mobility Hubs

Description: The Jacksonville Transportation Authority has identified a shift towards sustainable transportation by expanding mass transit services, mobility hubs, and multimodal transportation. These efforts are encapsulated in JTA's MOVE2027 (strategic plan and its Sustainability Action Plan, reflecting a commitment to regional connectivity, reduced carbon emissions, and enhanced public transit options^{26,27}.

- **Objective:** To reduce greenhouse gas emissions and promote a more sustainable and efficient transportation system by shifting from single-occupancy vehicle use to more sustainable modes such as public transit, walking, and biking, JTA aims to facilitate a significant reduction in the region's carbon footprint.
- **Strategy and Implementation:** To encourage this mode shift, JTA is investing in hybrid electric and CNG buses, recycling programs, bike-sharing programs, and transit signal priority systems.
- **Impact:** Past efforts have already shown success, with GHG emissions avoidance from mode shifting to transit recorded between 2013 and 2017.

Mass Transit Expansion

In the baseline inventory year of 2019, GEI estimates that up to 23% of travel within the NEFL region is considered outbound travel²⁸. GEI considers outbound travel as trips that leave the region boundaries, and this is projected to contribute to 1.6M mtCO₂e annually between now and 2050. Considering that several of the NEFL counties consist of residential development that supports the Duval County workforce, it can be assumed that much of this travel can be attributed to commuter transportation, and it can also be assumed that much of this travel will increase similarly with population growth to the region. To effectively drive down emissions, the Northeast Florida region must take great action to develop intercounty mass transit. JTA's First Coast Commuter Rail intends to establish a regional rail network in Northeast Florida, and the JTA Express Select is an existing program that offers morning and afternoon weekday intercounty shuttle service. Both programs aim to enhance the connection between Jacksonville's urban core and the surrounding areas.

The MOVE2027 strategic plan details both JTA's initiative to support regional rail development by completing necessary planning and environmental review processes (Strategy 5.01) and JTA's intention to expand the regional transit network (Strategy 5.03). JTA's approach includes coordinating various modes of transportation, such as rail, waterborne services, and a comprehensive transit network, to create an integrated system that effectively serves the growing population.



26. jtafla.com/media/34fnjggb/move2027.pdf

27. <https://www.transit.dot.gov/sites/fta.dot.gov/files/2022-04/Jacksonville-Transportation-Authority-Sustainability-Action-Plan.pdf>

28. [Google Environmental Insights Explorer - Make Informed Decisions \(sustainability.google\)](https://www.google.com/environmentalinsights/explorer/)

Schedule & Milestones

According to the JTA Sustainability Action Plan, the 2017 Passenger Miles Traveled was 153M miles. To overcome the transportation emissions and population growth for the region, three gasoline passenger vehicles to diesel bus transit user conversion scenarios are posed:

- Assuming an expansion rate of JTA programs across the region of 10% per year, this would result in 6.9M gallons of gasoline saved and 61,000 mtCO₂e reduction by 2030 and 111M gallons of gasoline saved and 989,000 mtCO₂e reduction by 2050.
- Assuming an expansion rate of JTA programs across the region of 15% per year, this would result in 11.4M gallons of gasoline saved and 102,000 mtCO₂e reduction by 2030 and 361M gallons of gasoline saved and 3.2M mtCO₂e reduction by 2050.
- Assuming an expansion rate of JTA programs across the region of 20% per year, this would result in 16.8M gallons of gasoline saved and 150,000 mtCO₂e reduction by 2030 and 1B gallons of gasoline saved and 3.2M mtCO₂e reduction by 2050.

Benefits of Multimodal Transportation

The mode shift and regional transit network expansion are expected to yield multiple co-benefits:

Enhanced Accessibility: By providing diverse transit options and mobility hubs, JTA addresses the mobility needs of all demographic groups, including the aging population and those who prefer non-auto transportation.

Economic Growth and Resilience: Companies and cities that invest in and promote the use of mass transit can reap significant benefits in terms of employee well-being and business success. At the individual level, a study from the Brookings Institute shows that, in an assessment of the 100 largest metropolitan areas, only 27% of the workforce can access a typical job by transit in 90 minutes or less²⁹. Research shows that shorter commute times are a significant predictor of upward economic mobility³⁰. Increased mass transportation reduces absenteeism in the workplace and increases overall productivity. This continuity ensures that projects and tasks are completed on schedule, enhancing the reputation of local businesses and customer experience. Indirectly, fewer car travelers will reduce the amount of parking lot development, which would increase real estate for the development of more affordable housing, businesses, and green spaces. Gainesville, FL has joined cities across the nation to diminish or remove minimum parking requirements³¹.

Sustainability and Quality of Life: These transportation initiatives, when in place, would revolutionize the area, leading to less congested streets, reduced noise levels, reduced air pollution, and lower individual and community transportation costs. Commuting via mass transit includes walking to and from stations or stops, which would contribute to daily physical activity. This can improve overall public health and reduce the likely chronic illnesses associated with sedentary lifestyles, such as obesity and cardiovascular illness, which are shown to have a higher incidence of occurrence in low-income and disadvantaged communities.

Funding

The Jacksonville Transportation Authority (JTA) is funded through a combination of local, state, and federal sources. JTA's budget is outlined in detail within their Budget Variance Package³². Here are a few examples:

Local Option Gas Tax: JTA has issued approximately \$100 million in fixed rate bond proceeds secured by JTA's share of the Local Option Gas Tax. The Jacksonville City Council approved a 10-year, 6¢ per gallon gasoline surcharge in 1986 to pay for new roadways and other transportation projects. Prior to its expiration in 1996, the council extended the tax for 20 additional years, until 2016³³. In 2021, the City Council approved a further extension and increase to 12¢ per gallon.

Federal Funding: The JTA also receives funding from federal sources such as the CARES Act funds (\$14.4 million), a Federal Transit Authority grant for bus and bus facilities (\$13.7 million), and Coronavirus Response and Relief Supplemental Appropriations Act funds (\$10.5 million)³⁴.

29. <https://www.brookings.edu/wp-content/uploads/2016/06/11-transit-labor-tomer-full-paper.pdf>

30. https://scholar.harvard.edu/files/hendren/files/mobility_geo.pdf

31. [U.S. cities are getting rid of parking minimums : NPR](#)

32. [fy23-budget_jta-variance-package_coj.pdf \(jtafla.com\)](#)

33. https://www.transit.dot.gov/sites/fta.dot.gov/files/5.15_930_JTA_ROI.pdf

34. <https://www.bizjournals.com/jacksonville/news/2021/06/07/jta-jobs-for-jax-capital-budget.html>

City of Jacksonville Bicycle and Pedestrian Path Programs

Description: The proposed bike-pedestrian programs consist of several projects, including the development of protected/separated bike lanes city-wide, continued development of Jacksonville’s Emerald Trail, expansion of COJ’s shared use paths network (beginning with the Core-2-Coast and the Emerald Trail, implementation of an E-bike voucher pilot program and an E-bike share program, and construction of shower/locker facilities for government offices.

- **Objective:** Increase active transportation mode share by expanding a safe and connected bicycle facilities network, expand/enhance a trail network that is comfortable, safe, and appropriate for all ages/abilities, and create an E-bike voucher program to provide modal options for underserved communities, offer residents and visitors alike a lower-emissions modal option for commuting, and construct shower/locker facilities for government offices, providing staff with facilities to support an elevation in active transportation.
- **Schedule & Milestones:** COJ bicycle and Pedestrian paths are part of a larger regional masterplan of North Florida TPO³⁵. Their goals include:
 - Provide an extensive, connected, and convenient on-road network of bicycle and pedestrian facilities throughout the North Florida TPO region. All agencies responsible for constructing and maintaining roadways within the region should continually review and potentially revise their roadway design standards. Maintain a unified inventory and associated map of bicycle and pedestrian facilities within the region every five years. Conduct at least one detailed “priority zone” subarea study identified in this plan per year to identify bicycle and pedestrian needs in those locations. Conduct at least one regional trail connection study for gaps outlined in this plan per year to identify appropriate bicycle and pedestrian facility improvements along those corridors.
 - Improve multi-modal transportation efficiency in the North Florida TPO region. Develop and implement a plan to increase the number of local employers that provide incentives such as bicycle parking, shower/locker facilities, financial incentives, Use bicycle and pedestrian facilities as part of an overall Congestion Management Plan strategy to maintain or improve motor vehicle levels of service in congested corridors that do not meet adopted LOS standards and flexible schedules to employees who commute to work via bicycle or pedestrian travel. Work with JTA and other public transportation providers to ensure that all existing and future transit shelters and other high-volume stop locations have bicycle racks and other basic amenities.
 - Provide an equitable bicycle and pedestrian network by focusing bicycle and pedestrian planning and facilities to those that need it most. Include an equity element in bicycle and pedestrian planning and programming efforts that focuses on low-income communities, and communities of color that have been disproportionately impacted by inadequate infrastructure. Include demographic elements in bicycle and pedestrian planning and programming efforts that focus on users that are more likely to benefit from and utilize the system including general population density locations, areas of high employment density, areas with a high percentage of zero car households, and concentrated areas of student populations.
- **Impact:** The programs are designed to encourage active transportation, create a lower bicycle level of traffic stress (BLTS) and improved safety, reduce dependency on cars for short trips, provide modal options for underserved communities, tourists, and residents, and lower overall carbon emissions in alignment with the city’s GHG reduction goals. Bike lanes and walking paths provide added layers of accessibility and encourage active, healthy lifestyles.
- **Estimated Emissions Reduction:** These programs, in total, are estimated to result in a 1,539 mtCO₂e reduction per year, reducing emissions by 7,695 mtCO₂e through 2030 and 38,475 mtCO₂e through 2050.
- **Feasibility:** Nationwide, most major metropolitan cities have advanced these efforts at a much larger scale and faster pace than COJ. Protected bike lanes are a proven safety countermeasure, resulting in higher ridership and associated benefits. E-bike voucher programs, such as the City of Denver’s incentive program, have reduced transportation emissions and increased active transportation mode share.

35. [FINAL_BikePedMasterPlan.pdf \(northfloridatpo.com\)](#)

- **Community Engagement and Feedback:** Regional outreach, master plans, and public surveys have indicated that residents want more bicycle infrastructure that is safe, connected, and suitable for users of all ages and abilities.
- **Metrics for Tracking Progress:** To track the progress of these programs, it is recommended that each be monitored to ensure optimization of utilization. Monitoring of bike usage along with public surveys can be compared to historical data to recognize progress. The E-bike voucher program can be tracked based on the number of vouchers utilized by the public. The progress of the E-bike share program can be tracked through the total fees and/or subscriptions collected by the initiative.

Benefits:

- **Public Health:** An increase in active transportation mode share means healthier communities through increased mobility and enhanced physical well-being of residents.
- **Environmental Stewardship:** The initiative supports COJ's environmental commitment by fostering a reduction in miles driven, thereby reducing GHG emissions.
- **Economic Development:** The development of these programs is expected to stimulate local economies through increased tourism and recreation-related commerce.
- **LIDAC Impact:** These programs will provide residents and underserved communities with an active transportation option to commute to employment centers, healthcare, retail, schools, places of worship, and other essential services. It is estimated that 80% of new ridership would be from low-income or zero-car households, currently using vehicle ride share or other internal combustion engine (ICE) vehicles for weekly short trips. The E-bike voucher program is specifically designed for lower-income residents, zero car households, and other EJ communities that currently rely on shared car services and other ICE vehicles. These bike programs will create healthier communities, increase safety for bike transportation, increase options and access for underserved communities, reduce transportation costs, and reduce emissions in the region resulting in better overall air quality.

Funding

Within the North Florida TPO Bike Ped Master Plan, several projects within Duval, St. Johns, Nassau, and Clay counties are in various states of progress, from planned, partially funded, in progress, and existing. Funding comes from multiple sources, including partnerships with JTA, non-profit organizations, municipal funding, and grants.

Fleet Transition to Electric Vehicles

Description: Northeast Florida is committed to transitioning fleet vehicles to EVs. This is a proven method of reducing GHG emissions and would dramatically reduce emissions in the region.

- **Objective:** Decrease emissions generated by the transportation sector, improve the region's air quality, and serve as a positive example for other entities to follow.
- **Schedule & Milestones:** Several Northeast Florida stakeholders are investing in electric vehicles to replace fleet vehicles used every day, including DCPS, JEA, JTA, the City of Atlantic Beach, the City of Jacksonville, and the City of St. Augustine. DCPS is the 6th largest school district in FL and 20th in the nation, with 197 schools servicing 129,000 students (minority enrollment at 70% with 40% economically disadvantaged) and 12,000 employees. The transition aims to reduce the region's carbon footprint by replacing vehicles operating on traditional fossil fuels. Assuming that the existing fleet will be replaced at a rate of 10% per year, implementation of this strategy would be over 10 to 15 years. Electric motors are typically 85% to 90% efficient, whereas internal combustion engines are 20% to 30% efficient. A fleet of 1,000 vehicles with a mix of light-duty, medium-duty, and heavy-duty diesel and gasoline engines would have an estimated carbon footprint of 12,000 to 15,000 mtCO₂e annually, while a fully electrified fleet supplied energy would use 4M kWh of energy annually and a regional footprint of 2,540 mtCO₂e. This would result in approximately 12,000 mtCO₂e annually. It is estimated that these transitions, per 1,000 fleet vehicles, will result in a 1,000 mtCO₂e reduction through 2030 and up to 186,900 mtCO₂e reduction through 2050.
- **Challenges:** Developing infrastructure to properly charge, maintain, and operate these vehicles will be a significant effort. Funding is also a central challenge for this endeavor. With increased demand for EVs in a region without an electric utility decarbonization strategy, this will only displace GHG emissions from the streets to the power generation plants. Upgrading EV fleet parking lots and service areas with Level 2 charging stations may require the installation of larger transformers that can handle the electrical demand. Advanced coordination of business with their electric utility provider is essential for the successful implementation of this strategy.
- **Metrics for Tracking Progress:** It is recommended that each organization monitor cost, environmental, operational, transition, regulatory and compliance, performance, and stakeholder metrics to better evaluate the effectiveness, costs, and benefits of the EV fleet transition.

Cost metrics include total cost of ownership, fuel savings annually, and maintenance costs. Environmental metrics include carbon emissions and energy consumption for EVs in kWh per 100 miles. Operational metrics include vehicle uptime/downtime, fleet utilization, and charging infrastructure utilization. Fleet transition metrics include adoption rate within the organization, infrastructure development, and employee training and engagement. Regulatory and compliance metrics include range efficiency under various conditions and vehicle reliability. Stakeholder metrics include driver, customer, and community feedback.

Benefits

- **Economic:** Future resale values for EVs, which affect the total cost of ownership calculations, increase the financial viability of transitioning the fleet. The demand for a wide range of EV models, from passenger cars and delivery vans to heavy-duty trucks, to meet the diverse needs of EV fleets will also increase the local market availability of EVs. As EV technology matures and production scales up, the total cost of ownership of EVs will decrease, making them more economically viable, including lower costs for batteries, maintenance, and energy consumption.
- **Public Health:** Reducing emissions means healthier communities and wildlife through increased air quality. Improvements in air quality will also reduce asthma attacks, heart attacks and strokes, lung cancer, and premature deaths, especially in those living nearest to transportation corridors.
- **Environmental Stewardship:** The initiative supports the region's environmental commitment by decreasing the volume of fuel burned, thereby reducing GHG emissions.
- **LIDAC Impact:** Focused job training and educational programs for low-income and disadvantaged populations will support the regional transition of EV adoption and create a knowledgeable workforce of drivers and maintenance staff. Reduced exposure to vehicle fuels and emissions is connected to improved health outcomes.

Funding

Local governments may use income from its infrastructure surtax (if applicable to that jurisdiction) to provide loans, grants, or rebates to residential or commercial property owners to install electric vehicle supply equipment, propane fueling infrastructure, and natural gas fueling infrastructure if a local government ordinance authorizing this use is approved by referendum.

Table 9 Cumulative GHG Emissions Reduction, in mtCO₂e, for the Transportation Sector GHG Reduction Strategies 2050 (25-year plan)

Transportation GHG Reduction Strategies		2030	2050
North Florida TPO’s Clean Fuels Initiative		72,345	482,297
Mass Transit Expansion and Mobility Hubs	10% Conversion annually	61,000	919,000
	15% Conversion annually	102,000	3.2M
	20% Conversion annually	150,000	9.5M
COJ Bicycle and Pedestrian Paths		7,695	38,475
Fleet Transition to EVs(per 1000 vehicles)		187,000 annually	

Cumulative Transportation Measures Authority to Implement

Section 163.3177(6)(b), F.S., establishes the requirements for transportation and mobility planning in local government comprehensive plans. Comprehensive plans must focus on providing a multimodal transportation system that emphasizes public transportation systems, where feasible, and encourages economic development through flexible transportation and mobility options for Florida communities. In accordance with the Growth Policy Act, local governments may establish a system that assesses landowners the costs of maintaining specified levels of service for components of the local government’s transportation system when the projected impacts of their development would adversely impact the system. This system, known as a concurrency management system, must be based on the local government’s comprehensive plan. Specifically, the local government comprehensive plan must provide the principles, guidelines, standards, and strategies, including adopted levels of service, to guide the application of its transportation concurrency management system. It is important to point out that whether a local government chooses to use a transportation concurrency system, it is required to retain the level of service standards for its roadways for purposes of capital improvement planning. If a local government elects to repeal transportation concurrency, it is encouraged to adopt an alternative mobility funding system.

Cumulative Transportation Measures Authority to Implement

Section 163.3177(6)(b), F.S., establishes the requirements for transportation and mobility planning in local government comprehensive plans. Comprehensive plans must focus on providing a multimodal transportation system that emphasizes public transportation systems, where feasible, and encourages economic development through flexible transportation and mobility options for Florida communities. In accordance with the Growth Policy

Act, local governments may establish a system that assesses landowners the costs of maintaining specified levels of service for components of the local government’s transportation system when the projected impacts of their development would adversely impact the system. This system, known as a concurrency management system, must be based on the local government’s comprehensive plan. Specifically, the local government comprehensive plan must provide the principles, guidelines, standards, and strategies, including adopted levels of service, to guide the application of its transportation concurrency management system. It is important to point out that whether a local government chooses to use a transportation concurrency system, it is required to retain the level of service standards for its roadways for purposes of capital improvement planning. If a local government elects to repeal transportation concurrency, it is encouraged to adopt an alternative mobility funding system.

Local governments may use income from its infrastructure surtax (if applicable to that jurisdiction) to provide loans, grants, or rebates to residential or commercial property owners to install electric vehicle supply equipment, propane fueling infrastructure, and natural gas fueling infrastructure if a local government ordinance authorizing this use is approved by referendum. The Florida Department of Transportation (FDOT) had to create a master plan for the development of electric vehicle supply charging stations along the State Highway System by July 1, 2021. FDOT also established staging areas that will include EV charging stations at key locations along the State Highway system to be used as emergency evacuation stops. FDOT published the Electric Vehicle Master Plan in 2021. Florida has taken important steps toward an electrified transportation future. Under the National Electric Vehicle Infrastructure Formula Program, established by the Bipartisan Infrastructure Law, the U.S. Department of Transportation will provide the FDOT with an estimated \$198 million over five years to address EV charging needs for passenger vehicles and light-duty trucks.

Industrial

In the Northeast Florida region, Nassau and Duval County stand out as significant contributors to industrial sector emissions, primarily due to the activities of large manufacturing companies in the region. Within the industrial sector GHG inventory, these companies include Westrock Paper Mill³⁶, Rayonier Performance Fibers Plant³⁷, CMC Steel production³⁸, the Symrise facility³⁹, Anchor Glass Factory⁴⁰, Anheuser Busch Canning⁴¹, U.S. Gypsum Manufacturing⁴² and IFF Chemical Holdings⁴³. These companies collectively play a major role in the area's environmental challenges, and each of them have sustainability commitments that will contribute to identification of regional sector targets for the Clean Air Northeast Florida CCAP, to be released in July 2025.

The Jacksonville Port Authority (JAXPORT) is a major hub for maritime activities in Northeast Florida, contributing significantly to the local and regional economy. It manages several cargo terminals and has been investing in infrastructure improvements to increase its capacity and efficiency. JAXPORT's activities significantly influence carbon emissions in the Northeast Florida area through its maritime and associated logistics operations. The port has been part of projects aimed at enhancing environmental sustainability. Additionally, the port's improvements include the introduction of LNG-powered container ships and new electric container cranes, which contribute to emission reductions by enhancing energy efficiency and reducing reliance on traditional fuels. Such initiatives indicate JAXPORT's commitment to reducing its carbon footprint and contributing to environmental sustainability in the region. The carbon emissions related to JAXPORT activities were not available by the publication of this PCAP but will be provided for the Clean Air Northeast Florida CCAP in July 2025.

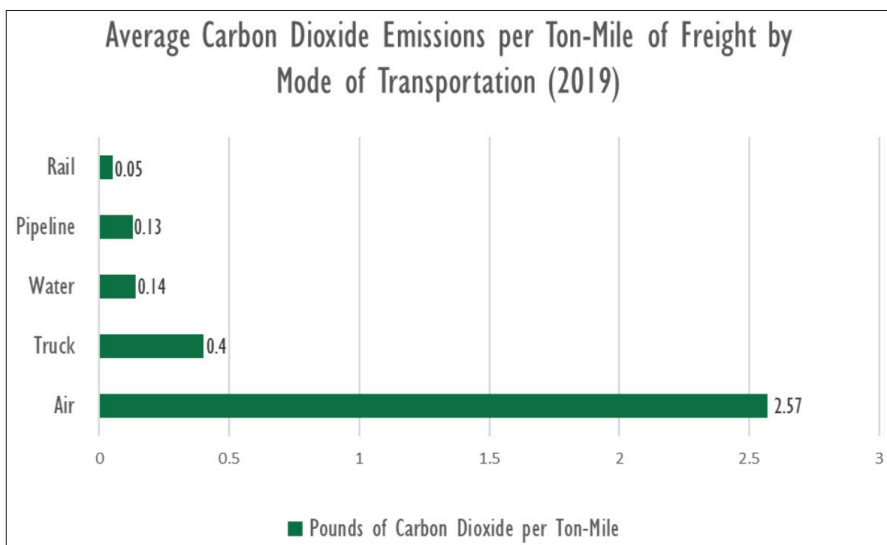
Crowley, a logistics, marine, and energy solutions company, holds a long-term partnership with JAXPORT, and both groups are looking to work together to decrease GHG emissions. In 2022, Crowley and JAXPORT were awarded a federal grant to support a 14.6-million-dollar project to reduce emissions and add electric power equipment at Crowley's terminal⁴⁴. The grant, funded 50% by the U.S. Department of Transportation and matched by Crowley, will facilitate the addition of zero-emissions equipment and charging stations. This initiative, part of the larger JAXPORT EXPRESS project, signifies a significant move towards sustainability and efficiency in supply chain operations, underscoring a joint commitment to a cleaner, decarbonized environment.

Green Shipping Corridor

Description: The shipping business conducted through JAXPORT and Crowley is an important economic sector to Jacksonville. However, that comes at the cost of high GHG emissions in the area. The following chart shows the average carbon dioxide emissions per ton-mile of freight, and trucks and water transportation are among the top highest emitters. Crowley has established a five-phase initiative to reduce GHG emissions by transitioning trucking and shipping to net-zero.

FIGURE 3

JAXPORT Crowley 2019
GHG Emissions by Mode of
Transportation, in lbs CO₂e
/ Ton-Mile



36. [westrock.com/-/media/pdf/sustainability/westrock-sustainability-report-2022-pdf.pdf?sc_lang=en](https://www.westrock.com/-/media/pdf/sustainability/westrock-sustainability-report-2022-pdf.pdf?sc_lang=en)

37. [Sustainable from the Start - RYAM](#)

38. [CMC_2021_Sustainability_Report.pdf](#)

39. [Sustainability and Responsibility | Symrise CR 2021](#)

40. [Sustainability | Premiere U.S. Glass Manufacturing | Anchor Glass Container Corp.](#)

41. [Environmental Sustainability | Anheuser-Busch](#)

42. [Sustainability - American Gypsum](#)

43. [Sustainable Solutions | IFF](#)

44. [Crowley, JAXPORT Awarded Grant to Make Terminal More Sustainable | Crowley](#)

- **Objective:** Decrease emissions by implementing carbon capture processes, electric vehicles, and renewable LNG into Crowley's business.
- **Schedule & Milestones:** Crowley proposed a five-phase plan to slowly incorporate all the changes to this strategy.

Phase 1: Carbon Capture on Class 8 Trucks

- Deploy a carbon capture system on Class 8 diesel trucks that operate between Jacksonville and Atlanta. This phase would first be implemented for newer diesel trucks in the fleet that would not need replacing soon.
- 120 tons CO₂e per year per Class 8 truck.

Phase 2: Zero-Emission Class 8 Trucks

- Deploy battery-electric Class 8 trucks that operate between Jacksonville and Atlanta. These trucks could reliably operate for 400 miles on a single charge or recharge in a similar amount of time it takes to refuel a diesel truck. This phase would first be implemented for trucks in the fleet that need replacing.
- 400 tons CO₂e per year per truck.

Phase 3: JAXPORT Emissions Reductions

- Build upon an existing project that seeks to deploy zero-emission cargo handling equipment, terminal support vehicles, renewable microgrid-backed DC fast charging infrastructure, and zero-emission drayage trucks for local service.
- 120 tons CO₂e per year per Class 8 truck
- 60 tons CO₂e per year per truck
- 40 tons CO₂e per year per UTR

Phase 4: Carbon Capture on U.S. Ships/Vessels

- Implement a carbon capture system to oceangoing ships/vessels that operate between Jacksonville, Puerto Rico, and the Caribbean. It would capture emissions from the exhaust stream and compress and store the emissions aboard the vessel for offloading in port. Whereafter, the captured gases would be sent for permanent sequestration or purification and subsequent utilization.
- 260 mtCO₂e per year, but 2,000+ mtCO₂e per year by 2030

Phase 5: Renewable LNG for Oceangoing Vessels

- The final phase seeks to liquify renewable methane and use it as a net-zero fuel for Con-Ro vessels servicing the Caribbean and Central America.
- 19,200 mtCO₂e per year

- **Challenges:** Challenges of this strategy include coordination with municipalities in other states, countries, or territories to incorporate components like EV charging stations or carbon offloading from vessels. Additionally, there are cost barriers to some components. For example, there is a significant cost barrier to procuring renewable natural gas due to the regulatory incentive available to compete with less efficient modes of transportation.
- **Metrics for Tracking Progress:** There are several important metrics to track the progress of this reduction strategy. Cost metrics include total cost of ownership, fuel savings annually, and maintenance costs. Environmental metrics include carbon emissions and energy consumption for Class 8 trucks, oceangoing ships, cargo handling equipment, terminal support vehicles, and more. Operational metrics include vehicle uptime/downtime, fleet utilization, and charging infrastructure utilization. Fleet transition metrics include adoption rate within the organization, infrastructure development, and employee training and engagement.

Benefits

- Economic:** The demand for a wide range of EV models, from passenger cars and delivery vans to heavy-duty trucks, to meet the diverse needs of EV fleets will also increase the local market availability of EVs. As EV technology matures and production scales up, the total cost of ownership of EVs will decrease, making them more economically viable for individuals and businesses, including lower costs for batteries, maintenance, and energy consumption. Additionally, the implementation of this strategy will provide opportunities for new jobs, including vessel construction, vessel operation crew, and port terminal operations.
- Public Health:** Reducing emissions means healthier communities and wildlife through increased air quality. Improvements in air quality will also reduce asthma attacks, heart attacks and strokes, lung cancer, and premature deaths, especially in those living nearest to transportation corridors.
- Environmental Stewardship:** The initiative supports the region’s environmental commitment by decreasing the volume of fuel burned, thereby reducing GHG emissions.
- LIDAC Impact:** Crowley has several programs to help low-income communities, including Crowley Impact, Crowley Cares, and the volunteering efforts of Crowley employees. Furthermore, the company has invested in the Crowley Center for Transportation and Logistics at UNF and is working expeditiously to leverage further investment to expand cross-sector collaboration to advance the workforce pipeline and develop new curriculum pathways for all ages and backgrounds. We see a future state in which local students are introduced to topics and concepts at key developmental stages to support interest in and commitment to pursuing the various educational pathways for meaningful careers in sustainable transportation, trade, and logistics. To support this future, Crowley also offers scholarships for trade schools, certifications, and college degrees. The financial and informational support that Crowley offers can provide more educational and career opportunities to residents of NEFL.

Table 10 Emissions Reduction by Phase, in mtCO₂e

		Reduction per Unit, mtCO ₂ e	Number	Adoption Rate	2030		2050	
					Vehicles Converted	Annual GHG Reduction	Vehicles Converted	Annual GHG Reduction
Phase 1 + Phase 2		109	135	15%	75	8,186	135	14,715
Phase 3	UTR	37	2	15%	1	41	2	73
	Local Drayage	52	4	15%	2	115	4	206
Phase 4 + Phase 5		2,000	10	15%	6	11,126	10	19,163

Funding

The Jacksonville Port Authority seeks partnerships with Crowley and other organizations for grant pursuits to pilot emerging technologies for carbon capture and carbon reduction.

Authority to Implement:

The Jacksonville Port Authority was created by a special act of the Florida Legislature in 1963 to develop, maintain, and market Jacksonville's port facilities. The specific powers and duties of the Port are controlled by statute and local code⁴⁵. Within the authority of the Port is the power to control projects, issue bonds, and enter into agreements with various Port service providers. All these authorities can be used to control land-based port operations that can achieve any GHG reduction goals or strategies the Port adopts. It should also be noted that various Federal agencies are involved in the development of rulemaking on GHG Standards for medium and heavy-duty trucks.

It should be noted also that ship air pollution standards are contained in the International Convention for the Prevention of Pollution from Ships (MARPOL) and regulated by the International Maritime Organization, a UN Agency. Specifically, Annex VI of MARPOL sets NO_x limits for marine engines and sulfur limits for marine fuels to reduce SO_x and PM. Compliance is ensured by periodic inspections and surveys, as well as flag state and port state control. EPA standards for exhaust and evaporative emissions reduce the environmental impact of marine spark-ignition engines and vessels. The emission standards require manufacturers to control exhaust emissions from the engines and evaporative emissions from fuel tanks and fuel lines.

45. https://library.municode.com/fl/jacksonville/codes/code_of_ordinances?nodeId=CHRELA_PTBRELA_ART5JAPOAU_S3PO#:~:text=The%20Jacksonville%20Port%20Authority%20shall,boundary%20lines%20as%20hereinafter%20provided.

SOLID WASTE & WASTEWATER

City of Palm Coast Wastewater Efficiency

The City of Palm Coast faces a challenge in wastewater operations during heavy rainfall events, emphasizing the negative impact on efficiency, energy consumption, and costs. The primary issues include stormwater infiltration leading to increased pumping demands, safety concerns, and financial implications due to the deployment of pump trucks.

The proposed solution involves implementing pipe and maintenance hole lining to mitigate the impact of stormwater inflow and infiltration, particularly during high rainfall events.

The proposed pipe and maintenance hole lining implementation in the City of Palm Coast's wastewater infrastructure presents a promising avenue for reducing GHG emissions.

Energy Efficiency: The project's primary goal is to enhance energy efficiency by minimizing stormwater infiltration during heavy rainfall events. By addressing this issue, the City aims to optimize wastewater operations, resulting in lower energy consumption. The National Renewable Energy Laboratory (NREL) identifies infiltration, inflow, and leaks in wastewater systems as areas where energy is often wasted. The proposed solution directly targets these inefficiencies, potentially leading to substantial energy savings⁴⁶.

Decreased Pumping Demands: The energy systems affected are the lift stations, transfer pumps, and pumps within the wastewater treatment plant. The project's focus on preventing stormwater from entering the wastewater system can reduce the demands on pumping stations during rainfall events. This reduction in pumping demands translates to lower energy usage and, thus, a positive impact on GHG emissions.

Reduced Diesel Fuel: During intense or prolonged rain, drainage systems are overwhelmed and can lead to street flooding. In these scenarios, sanitary sewer overflows (SSOs) release raw sewage before it reaches the wastewater treatment facility. Because raw sewage contains bacteria and solids that can endanger human health and the environment, The City of Palm Coast has developed a systemic response to deploy trucks to pump this water and divert it from neighborhoods and back to water treatment facilities.

Financial Energy Savings: In addition to energy

savings, the improvements will have reduced the use of chemicals during the treatment process, such as sodium hypochlorite and other sterilizing agents.

Trenchless Pipe Repair: A trenchless pipe repair method that uses cured-in-place pipe lining enhances the project's eco-friendliness. This method minimizes disruptions associated with traditional excavation, resulting in a more sustainable approach to infrastructure improvements.

Metrics for Tracking Progress: It is recommended that volume reduction, energy consumption, GHG emissions, costs, water quality, system performance, and stakeholder impact metrics. Reduced inflow and infiltration volume can be gauged by comparing pre- and post-upgrade flow rates during wet weather conditions. Track the number and volume of SSOs before and after upgrades. Energy usage at the lift stations, transfer pumps, and wastewater treatment pumps should be monitored and tracked with 1-inch rainfall events. Diesel consumption by the emergency response trucks should be tracked annually. Cost metrics should incorporate costs associated with operating and maintaining the wastewater systems before and after upgrades, energy costs, emergency response costs, and avoidance of SSO penalties. It will also be necessary to evaluate the wastewater system's effective capacity, assess changes in the expected lifespan of the infrastructure, and collect community feedback on the occurrence of SSOs and odors.

Benefits

LIDAC: Low-income and disadvantaged communities stand to benefit from enhanced public health, economic benefits, improved systems resilience and environmental conditions, and odor reduction. The City of Palm Coast plans to redirect 25% of the financial energy savings generated within the program's first ten years to waive water utility connection fees for new workforce/affordable housing construction. This community-focused approach contributes to long-term sustainability and aligns with broader environmental and social goals. The reduction of SSOs will contribute to cleaner water in ponds, streams, and recreational areas. Strengthened infrastructure improves resiliency to extreme weather events and reduces property damage. Finally, investment in these upgrades will lead to temporary jobs during the construction phase and potential permanent positions for system maintenance and operation.

46. [Energy Efficiency Strategies for Municipal Wastewater Treatment Facilities \(nrel.gov\)](#)

47. [NPDES: Stormwater Best Management Practice, Preventing Stormwater Contamination from Sanitary Sewage \(epa.gov\)](#)

GHG Reduction Calculations

To calculate the GHG reduction, information regarding rainfall exceeding one inch in the year 2023 within the City of Palm Coast was sourced from the National Oceanic and Atmospheric Administration (NOAA) database. Additionally, data pertaining to a specific rainfall event surpassing 1 inch and the average energy consumption in kWh emitted from the five master pump stations were acquired from the Palm Coast Wastewater Department. The conversion factor utilized to translate kWh to CO₂e stands at 0.004.

Table 11 Cumulative GHG Emissions Reduction, in mtCO₂e, for the City of Palm Coast Wastewater Efficiency Strategy

	Average Annual GHG Reduction	2030	2050
5 Master Pump Stations	35.9	215.5	933.78

Funding

The City of Palm Coast has allocated funds in its five-year Capital Improvement Plan (CIP) for maintenance holes and piping, with additional annual funding sought to optimize operations in extreme weather conditions. City of Palm Coast seeks additional grant funding to expedite their improvements timeline.

Solid Waste – Commercial Composting Program

Description: In the Northeast Florida region, several cities actively participate in a survey to assess their readiness and plans for GHG reduction measures. These cities include Jacksonville, Atlantic Beach, and St. Augustine, each presenting unique programs to address environmental sustainability. Waste management strategies for the cities include composting, and both Jacksonville and St. Augustine also strive to implement waste-to-energy innovations.

Objective: To increase composting and waste-to-energy innovations around multiple cities.

- **Impact:** Yard and food waste are leading causes of methane in landfills. This initiative aims to create compost and fertilizer for local agriculture, community gardens, and clean energy production.

Schedule & Milestones

- **City of Jacksonville:** Building upon an already existing program, the City of Jacksonville aims to assess its readiness and plans for GHG reduction measures. A specific measure, the “Expansion of COJ Commercial Composting Program,” focuses on diverting organic waste to create compost and fertilizer for local agriculture, community gardens, and clean energy production. COJ has no timeline for its implementation as of yet and aims to achieve funding through grant opportunities.
- **City of St. Augustine – Composting:** The City of St. Augustine has expressed interest in participating in a composting waste and material management program. As part of their commitment to environmental sustainability, the city is exploring opportunities to contribute to waste reduction efforts and promote a greener community. Currently no timeline for this measure exists.
- **City of St. Augustine – Waste Diversion:** The City of St. Augustine commits to a GHG reduction measure focused on waste diversion. The program aims to reduce organic waste from restaurants and hotels in the city’s historic district, which serves over 5,000,000 visitors annually. This initiative falls within the EPA’s economic sector classification of Waste and Materials Management and is categorized as a near-term program to be implemented in the next five years.
- **City of Atlantic Beach:** The City of Atlantic Beach has expressed interest in participating in a composting waste and material management program for local beaches or residential areas. This program would include a drop-off or curbside collection option for residents or businesses. City of Atlantic Beach is exploring public-private partnerships for its implementation.

Benefits

- **GHG Reduction:** Composting and waste diversion prevent organic materials from entering landfills. When introduced to landfills, these materials are emitted into the atmosphere as methane, a harmful GHG. It is assumed that GHG released by organic waste is reduced by 30% when it is diverted from landfills to create compost and fertilizer for local agriculture and community gardens per the California Air Resources Board and that the amount of yearly GHG reductions will stay consistent at 2019 levels. The average restaurant produces 25 wet tons of food waste each year. Table 11 displays varying adoption scenarios and their associated annual GHG reduction.
- **Agriculture:** Composting and waste diversion creates an opportunity to reallocate organic materials from food and yard waste that would otherwise go to landfills. It can create healthy fertilizer for local agriculture, reduce erosion, and conserve water.
- **LIDAC Impact:** By diverting organic waste to create compost and fertilizer for local agriculture and community gardens, the program can contribute to addressing food insecurity in low-income areas. This is particularly crucial for communities that may have limited access to fresh and healthy food options. The program also offers potential economic opportunities for residents, including job creation and workforce development. By participating in composting activities or related industries, members of the LIDAC community can gain valuable skills and employment opportunities, contributing to economic development and empowerment. Finally, by reducing the amount of organic waste sent to landfills, the program helps mitigate methane emissions, which are potent greenhouse gases. This contributes to improved air quality and public health, benefiting all residents, particularly those in vulnerable communities who may be disproportionately affected by air pollution.
- **Community Engagement and Education:** The program provides opportunities for community engagement and education on sustainable waste management practices. By involving residents in composting initiatives and educational campaigns, the program fosters a sense of ownership and environmental stewardship within the LIDAC community.
- **Support for Local Initiatives:** The program supports local initiatives aimed at environmental sustainability and waste reduction. By partnering with community organizations and leaders, the City of Jacksonville can ensure that the Compost Program's benefits reach the LIDAC community effectively.

Table 12 Cumulative GHG Emissions Reduction, in mtCO₂e, for the Municipal Composting GHG Reduction Strategies

Municipality	Adoption Rate	Average Annual GHG Reduction	Estimated Total Reduction by 2030	Estimated Total Reduction by 2050
City of Jacksonville*	10%	11,953	717	310,773
	30%	35,840	215,040	931,842
	50%	59,703	358,217	1,552,274
City of Atlantic Beach	10%	102	612	2,652
	30%	306	1,836	7,957
	50%	510	3,060	13,262
City of St. Augustine	10%	141	846	3,666
	30%	423	2,538	10,998
		705	4,230	18,330

Funding

Each organization is actively seeking grants and public-private partnerships to cover their program's capital costs. These organizations are ready to assume long-term program costs and program expansion.

Solid Waste – Trail Ridge Landfill Upgrades

Description

Landfills emit harmful gases to the atmosphere, and the City of Jacksonville Trail Ridge landfill serves Duval County, Alachua, Baker, and Nassau Counties. Trail Ridge Landfill releases an estimated 12,873 mtCO₂e in methane annually. With a global warming potential at least 28 times greater than CO₂ and short atmospheric life, methane is a potent greenhouse gas that is a key contributor to global climate change. Reducing methane emissions from landfills is an effective way to achieve near-term beneficial impact in mitigating global climate change. Trail Ridge Landfill upgrades address community-wide methane emissions and aim to upgrade the landfill for more efficient gas collection and conversion to Renewable Natural Gas (RNG).

- **Objective:** The first objective is to collect Landfill Gas (LFG) and reuse it in generators for power or purification. Secondly, a geosynthetic liner would be installed on top of the closed areas of the landfill to prevent gas emissions.
- **Impact:** In addition to the GHG reduction value, methane contributes to tropospheric ozone levels as an ozone precursor.

Schedule & Milestones

- **Gas Conversion:** The City of Jacksonville is seeking an agreement with a local company to receive LFG from the Trail Ridge Landfill. The city would install gas lines within the waste cells, which could then be piped to a third party for treatment and reuse. For example, the gas could travel to a manufacturing facility for additional process heating. No timeline for this measure exists as of yet.
- **Geosynthetic Liner:** Many areas of the Trail Ridge Landfill have reached capacity and are closed off at the top by impermeable clay. However, this clay may develop cracks over time, releasing atmospheric gases. A geosynthetic liner would help prevent these gases from escaping. This liner can be installed on top of landfill areas that have reached their capacity. Similarly, the liner can be welded to various infrastructures like gas wells that have the potential to allow gases to escape.

Benefits

- **Gas Conversion:** This project takes gases, primarily methane, that would otherwise be emitted into the atmosphere. Reentry of landfill gas as a power source further diversifies the power grid and reduces our dependence on foreign fuel sources. Utilizing existing Municipal Solid Waste (MSW) landfills to produce electricity is an economical strategy for creating new renewable energy generation capacity to meet the power requirements of the community. LFG can function as a “baseload renewable,” offering an online availability rate of over 90%.
- **Reduced Air Pollution Through Non-Renewable Source Offsetting:** Generating energy from LFG reduces reliance on non-renewable resources like coal, oil, and natural gas. This helps in avoiding emissions of CO₂ and other pollutants such as sulfur dioxide, particulate matter, nitrogen oxides, and hazardous air pollutants from power plants and fossil fuel users.
- **Health and Safety:** The process of incinerating LFG to generate electricity effectively eliminates most non-methane organic compounds, including hazardous air pollutants and Volatile Organic Compounds (VOCs), which are found in low concentrations in uncontrolled LFG. This significantly mitigates potential health hazards posed by these compounds. Moreover, collecting the gas enhances safety by preventing the risk of explosions due to gas build-up in or around structures near the landfill.
- **Reduced Environmental Compliance Costs:** Presently, the Clean Air Act mandates that the EPA enforce regulations requiring larger landfills to gather and burn LFG. There are multiple ways to comply with these regulations, such as flaring the gas or setting up an LFG energy recovery system. However, only the implementation of an LFG energy recovery system allows communities and landfill owners to convert pollution into a beneficial resource, thereby offsetting the expenses related to regulatory compliance.

Table 13 Cumulative GHG Emissions Reduction, in mtCO₂e, for the Transportation Sector GHG Reduction Strategies

Landfill	Capture Rate	Average Annual GHG Reduction	2030	2050	Homes Provided Energy Each Year by Captured Methane
Trail Ridge	60%	360,444	1,802,220	9,011,100	2,053

Funding

City of Jacksonville is currently exploring opportunities for methane capture for renewable energy. It is also actively seeking grant opportunities to help establish these technologies in the Northeast Florida region.

LIDAC Impact

Through this initiative, the community stands to experience improved air quality and potential cost savings, alongside reductions in emissions. Long-term exposure to LFG is associated with a decline in lung function and increased rates of asthma⁴⁸. By upgrading the landfill for more efficient gas collection and converting it into Renewable Natural Gas (RNG), the project not only addresses community-wide emissions but also supports enhanced air quality in surrounding areas, leading to better public health outcomes. Additionally, the expansion of landfill energy generation potential holds promises for further environmental and economic gains. From the Landfill Methane Outreach Program’s LFG cost-Web, for \$5 million dollars of expenditures, there is an economic output between \$12-13 million and up to 80 jobs created. With collaboration from local businesses and JEA, the project aims to pioneer scalable solutions in landfill gas utilization, highlighting its transformative impact. Supported by key stakeholders, including the Director of Public Works and COJ Environmental Programs Manager, this initiative underscores Jacksonville’s commitment to sustainability and the well-being of its LIDAC community.

Cumulative Wastewater and Solid Waste Measures Authority to Implement

For local governments, solid waste and wastewater functions are generally delegated to the local government and can be outsourced through franchise agreements, operated internally, or other structures. Therefore, the authority to implement solid waste strategies is going to be variable across the region.

48. [ATSDR - Landfill Gas Primer - Chapter 3: Landfill Gas Safety and Health Issues \(cdc.gov\) 20210111-CLAM_Final_Word \(nassaucountyfl.com\)](#)

Agriculture, Forestry, and Other Land Use

The State of Florida is one of the fastest growing in the country. As of 2022, Florida's population reached 22,244,823, over nine times greater than its 1946 population of 2,440,000. Such incredible growth has undeniable benefits but also places a strain on infrastructure and encroaches on our unique natural resources. With some counties projecting population growth in the range of 40-60% in the next decade, it is necessary to implement strategic measures to maintain Florida's most important asset - its rich natural and cultural heritage.

Some local municipalities have already established new parks under this model. Marineland created a "Geo Park" to preserve environmentally sensitive land and is seeking funding to develop additional parks. The City of St Augustine acquired Fish Island Preserve in November 2019 as part of the Northeast Florida Blueway Forever Project, preserving land in imminent danger of development.

Land Acquisition

Description: In collaboration with the North Florida Land Trust, Nassau County has developed a comprehensive Conservation Lands Acquisition and Management (CLAM) conservation plan⁴⁹. The primary goals are addressing water issues, species and habitat protection, outdoor recreation, and quality of life, and the secondary goals include preserving working lands such as farms, ranches, and timberlands. Coupled with sustainable farming and agricultural practices, Nassau County can maximize the land's ability to function as a carbon sink to the area.

Land acquisition can also lead to the creation of alternative transit corridors, as seen in the City of Jacksonville's Emerald Trail plan. Creating new pedestrian and biking corridors would connect residents, businesses, and amenities, potentially reducing transportation-related carbon emissions and increasing the viability of intermodal passenger transport.

Schedule & Milestones

- **Objective:** Nassau County would like to acquire 100,000+ acres of land, which has been identified and prioritized for acquisition to preserve wildlife and enhance resiliency⁵⁰. This land acquisition plan has overwhelming support from county residents, who voted to expand their budget by \$30M.
- **Impact:** Preserving undeveloped land benefits air quality, and carbon capture improves public health and well-being and can lead to expanded tourism opportunities. Maintaining wildlife habitats and provisioning for wildlife corridors allows wildlife to avoid roadways and human infrastructure, protects biodiversity, and enhances ecosystem resilience. Forested lands are crucial in absorbing and sequestering carbon dioxide and other greenhouse gases. According to the USDA, forested lands have an uptake average of 0.6 metric tons of carbon per hectare per year, whereas agricultural lands have an uptake average of 0.1 metric tons of carbon per hectare per year^{51 52}. Potential carbon storage for agroforestry ranges in the U.S. from 15 to 198 metric tons of carbon per hectare per year. As the Nassau County CLAM plan grouped Agriculture and Forestry as one type of land, the average uptake value was estimated to be 0.5. Natural Areas and their soils also have a more modest uptake average of 0.1 metric tons of carbon per hectare per year. According to the Nassau County Land Development Plan, developed land for population growth through 2030 is anticipated to be 10.4 hectares and could expand to another 9 hectares with the same development to population growth projections applied⁵³. However, with a land acquisition rate of 5 hectares of forested and agricultural lands over the next 25 years, and new development focused on non-forested lands, GHG reduction from natural land carbon sinks will remain stable through 2030 and 2050.

49. [20210111-CLAM_Final_Word \(nassaucountyfl.com\)](#)

50. [082522-CLAM-Map \(nassaucountyfl.com\)](#)

Table 14 GHG Emissions Reduction, in mtCO₂e, for Nassau County Land Use and Development

Land Use Type	2019 Land Area, hectares	2019 Average Annual GHG Reduction	2030 Land Area, hectares	2030 Annual GHG Reduction	2050 Land Area, hectares	2050 GHG Reduction
Agriculture and Forestry	77,336	38,668	77,338	275,755	77,341	38,671
Natural Areas	73,924	7,392	73,914	7,391	73,905	7,391
Developed / Urban Land	20,630		20,640		20,649	

Benefits

- **Public Health:** Promoting rural lifestyles and providing equitable access to conservation lands through a county-wide network of trails and blue ways, enhancing alternate transportation options and quality of life.
- **Ecological Resilience:** Preserving sensitive environments maintains Florida’s bountiful natural beauty and biodiversity. Conservation areas allow wildlife to range while reducing potentially dangerous interactions with human roadways and development.
- **Alternate Transportation Options:** Developing new pedestrian and bicycle transit corridors reduces reliance on traditional transportation options, significantly impacting carbon emissions.
- **LIDAC Impact:** Air pollution can lead to respiratory diseases, including Chronic Obstructive Pulmonary Disease and asthma, and has further been linked to neurological disorders and inflammation. Low-income communities are disproportionately impacted by air pollution from stationary sources such as factories and power plants, as well as mobile sources brought about by proximity to truck routes and highways. These communities are also less likely to benefit from political representation and the enforcement of emissions regulations. The creation of vegetated parks and corridors through land acquisition would lead to a direct reduction in air particulates and may lead to reduced reliance on vehicle travel, thereby improving air quality and quality of life for residents.

Disadvantaged communities also face greater heat than their counterparts. Man-made surfaces, such as concrete, tend to absorb heat, and structures can create an “urban canyon” effect by blocking wind. Higher temperatures increase reliance on power generation and cooling, which in turn become a source of heat. Cities experience 1-7°F temperatures higher than the surrounding countryside, and EPA data shows that the frequency of heat waves has increased from two per year in the 1960s six per year in the 2010s and 2020s. Furthermore, a 2021 study was able to show a correlation between low-income and minority communities and elevated urban surface temperatures compared with other communities within the same city.

Increasing vegetation through land development helps to mitigate the factors contributing to the urban heat island effect. Trees provide shade and can even cool their surroundings through transpiration and evaporative cooling - an effect of energy being absorbed by water when it changes states from liquid to gas. The EPA estimates urban forests are, on average, 2.9°F cooler than unforested urban areas. Expanding parkland, planting street trees, and installing “green/ cool roofs” coupled with the use of reflective coatings would provide heat relief for our communities, particularly those that are most vulnerable.

51. [Greenhouse Gas Emissions and Removals From Forest Land, Woodlands, Urban Trees, and Harvested Wood Products in the United States, 1990–2021 \(usda.gov\)](#)
 52. [Carbon sequestration in agricultural lands of the United States \(usda.gov\)](#)
 53. [Microsoft Word - 9-Future Land Use Element DandA - Clean Copy -.doc \(nassaucountyfl.com\)](#)

Funding

In November 2022, 68% of voters were in favor of a referendum for Nassau County to issue up to \$30M in general obligation bonds for the Nassau County CLAM program. Nassau county will continue to seek funding for the several acres of lands they intend to acquire through grants and county and regional resiliency programs.

Authority to Implement:

The authority to implement various land acquisition and management strategies is a function of local government partnerships and resources. Partnerships with other entities and individual landowners are key to successful programs. A key program to leverage local land acquisition and land management activities is the Rural and Family Lands Protection Program. The Rural and Family Lands Protection Program (RFLPP) is an agricultural land preservation program designed to protect important agricultural lands through the acquisition of permanent agricultural land conservation easements. The program is written in Section 570.70, Florida Statutes, and Chapter 5I-7, Florida Administrative Code (F.A.C.). A Technical Review Team reviews projects, ranking them through a formal process by the Rural and Family Lands Protection Program Selection Committee and approved by the Governor and Cabinet.

IV. LOW-INCOME AND DISADVANTAGED COMMUNITY (LIDAC) BENEFIT ANALYSIS

Many LIDACs in NEFL will benefit from the implementation of the priority measures included in this PCAP. The measures will reduce public health inequities, increase economic opportunities through clean energy jobs, and improve the natural environment and community resilience. The goals of the Justice40 Initiative set forth in Executive Order 14008, which aims to deliver 40% of the overall benefits of relevant federal investments to disadvantaged communities, will also be advanced through the measures. It is vital to remember that by addressing social, environmental, and economic acute and chronic stressors in a region, the large cost of climate adaptation and mitigation efforts is decreased. This section covers the methodology used to determine LIDACs in the region, which locations have certain burdens, and how the proposed priority measures will positively impact the LIDACs and reduce certain burdens.

Methodology

For the purposes of the CPRG, LIDACs are defined as any community that is identified as disadvantaged by the Council on Environmental Quality Climate and Economic Justice Screening Tool (CEJST)⁵⁴ and/or EPA's Environmental Justice EJScreen⁵⁵ tool. The CEJST is a geospatial mapping tool that uses an interactive map and datasets to identify communities that are overburdened and underserved. These communities are marginalized by society, underserved by infrastructure and other basic services, and overburdened by pollution. CEJST is based on the third smallest census tract (1,200-8,000 people) and uses indicators of burden in eight categories: climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. Census tract boundaries for [statistical areas](#) are determined by the U.S. Census Bureau once every ten years. As of the writing of this plan, CEJST utilized the census tract boundaries from 2010. A community is highlighted as disadvantaged on the CEJST map if it is in a census tract that is (1) at or above the threshold (usually 90th percentile) for one or more environmental, climate, or other burdens and (2) at or above the threshold for an associated socioeconomic burden (usually income at or above 65th percentile). The EJScreen is an environmental justice mapping and screening tool that provides nationally consistent datasets and an approach for combining environmental and demographic socioeconomic indicators. It uses the census block group level and can layer data such as pollution sources and level of education that can afford an even deeper understanding of a community. Both tools were used to identify and understand communities that are overburdened and underserved in NEFL so they can be prioritized in development and implementation opportunities. The categories, type of burden, thresholds, and descriptions are provided in Appendix D.



54. <https://screeningtool.geoplatform.gov/en/#9/30.2857/-81.7015>

55. <https://ejscreen.epa.gov/mapper>

Table 15 Number of People Affected with a Disadvantaged Burden Addressed by a Proposed Measure(s)⁵⁹

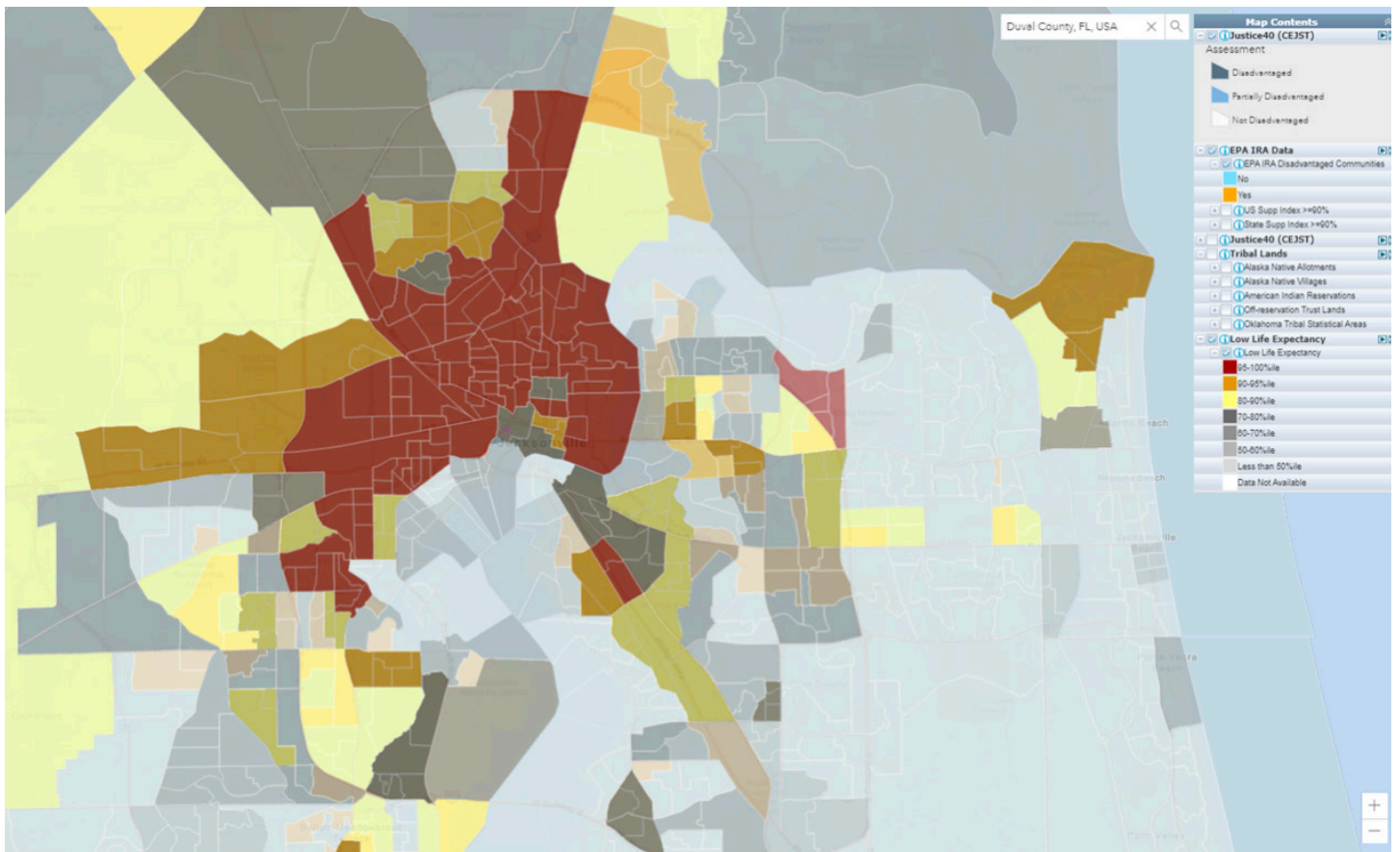
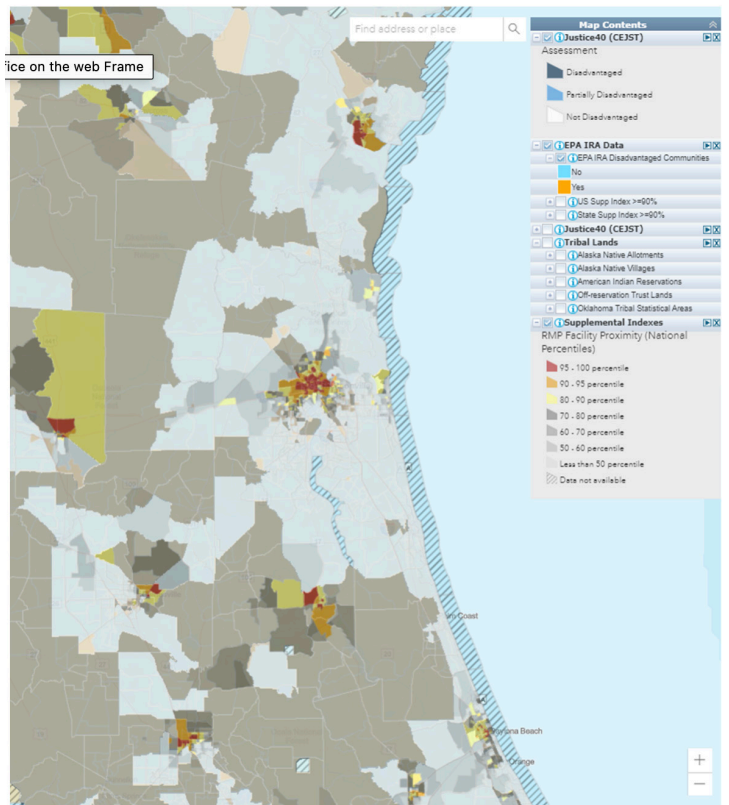
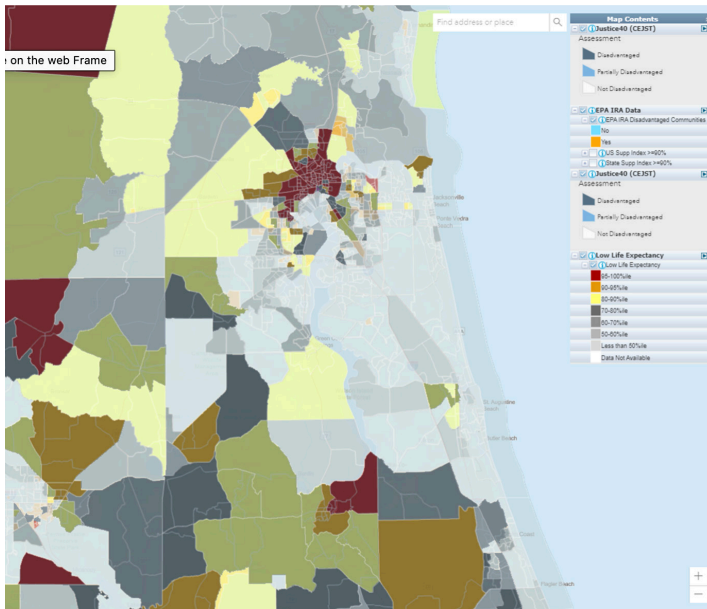
Burden	Number of LIDACs / Frequency of Burden (90th and Low Income/HS)	Number of People Affected	Location / Number of Census Tracts Impacted	Proposed Measure(s)
Low Life Expectancy	41	163,236	39 Duval; 1 Palm Coast; 1 Clay	All proposed measures
Proximity to Risk Management Plan (RMP) facilities	40	150,280	39 Duval; 1 St. Johns	Potential Landfill Gas Recovery
Projected Fire Risk	20	132,019	4 Clay, 11 Duval, 5 Palm Coast	All proposed measures will potentially indirectly help slow down and reduce the severity of acute weather events
Heart Disease	28	109,445	23 Duval; 3 Palm Coast; 1 Clay; 1 St. Johns	Bike/Pedestrian programs; Mode shift
Diabetes	29	106,400	28 Duval; 1 Palm Coast	Bike/Pedestrian programs; Mode shift
Low median income	26	98,578	26 Duval	Potentially energy efficiency and solar for buildings; Bike/ Pedestrian programs; Mass transit expansion; Mode shift; Workforce development tied to measure implementation
Asthma	23	82,706	23 Duval	Increase in renewable energy for electrical grid; Energy efficiency and solar for buildings; EV fleet transition; Bike/Pedestrian programs; Mass transit expansion; Mode shift
Travel Barriers	12	68,700	1 Baker, 6 Clay, 1 Duval, 1 Nassau, 2 Palm Coast, and 1 St. Johns	EV fleet transition; Bike/ Pedestrian programs; Mass transit expansion; Mode shift
Unemployment	18	66,962	18 Duval	Workforce development and training tied to measure implementation
Poverty	18	63,163	1 Clay, 17 Duval	Potentially energy efficiency and solar for buildings; Bike/ Pedestrian programs; Mass transit expansion; Mode shift; Workforce development tied to measure implementation

Housing cost/burden	17	61,149	16 Duval, 1 St. Johns	Potentially energy efficiency and solar for buildings
Projected Flood Risk	10	50,026	3 Duval, 5 Palm Coast, 2 St. Johns	All proposed will potentially indirectly will indirectly help slow down and reduce the severity of acute weather events
Energy Burden/Costs	15	49,784	15 Duval	Energy efficiency and solar for buildings
Historic Underinvestment	14	46,479	14 Duval	Energy efficiency and solar for buildings; EV fleet transition; Bike/Pedestrian programs; Mass transit expansion; Mode shift
Expected Building Loss	3	38,062	2 Flagler, 1 St. Johns	All proposed measures will potentially indirectly will indirectly help slow down and reduce the severity of acute weather events
Traffic Proximity and Volume	12	37,826	12 Duval	EV fleet transition; Bike/ Pedestrian programs; Mass transit expansion; Mode shift
Diesel PM Exposure	10	36,594	10 Duval	EV fleet transition; Bike/ Pedestrian programs; Mass transit expansion; Mode shift
Wastewater discharge	10	34,409	10 Duval	Wastewater treatment efficiency upgrades will slow down infiltration and discharge
Education less than a high school diploma +25yo	7	20,222	7 Duval	Workforce development and training tied to measure implementation
Linguistic isolation	3	18,646	3 Duval	Intentional outreach with sensitivity to linguistic needs
Expected Population Loss	4	16,001	4 Duval	All proposed measures will potentially indirectly will indirectly help slow down and reduce the severity of acute weather events

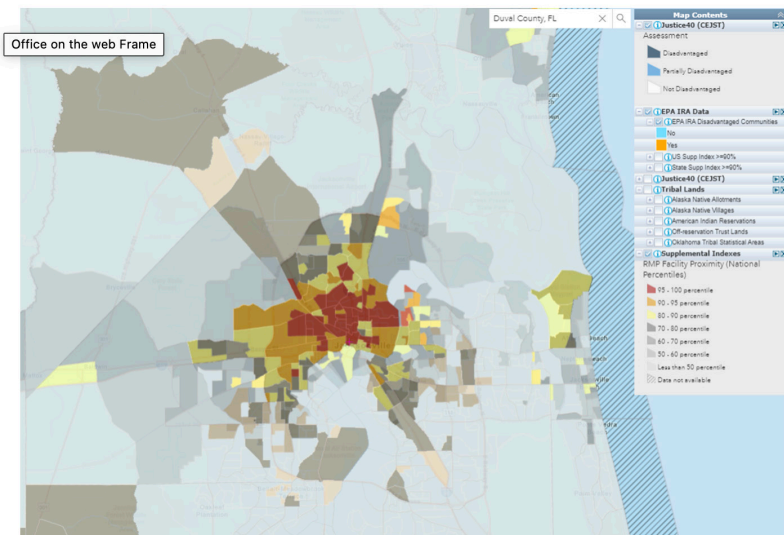
59. [Data on burdens downloaded and analyzed from Climate and Economic Justice Screening Tool \(CEJST\) - https://screeningtool.geoplatform.gov/en/downloads](https://screeningtool.geoplatform.gov/en/downloads). Maps showing locations of LIDACs and burdens are from the EPA EJ Screening mapping tool ejscreen.epa.gov/mapper/. Complete list of burdens by number of people affected can be found in Appendix XXX

Maps of Top Five Most Populous LIDACs with a Specific Disadvantaged Burden

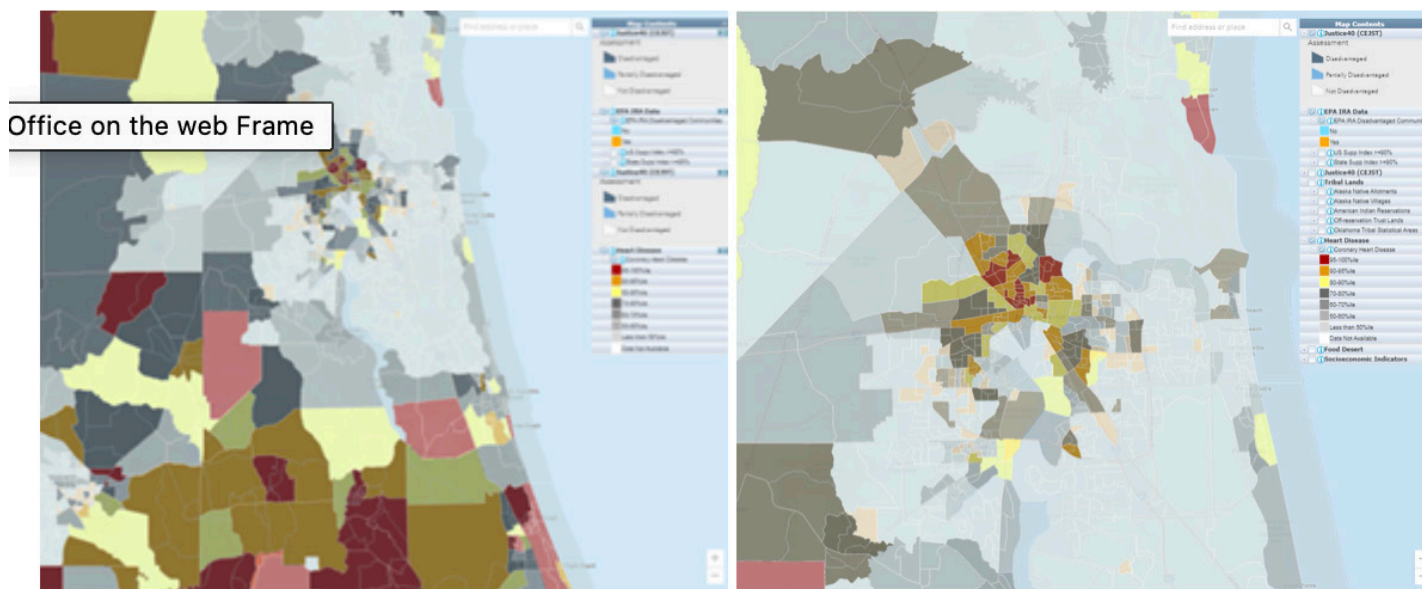
EPA EJ Screen NEFL MSA Map and Duval County Map of Low Life Expectancy Burden (39 LIDACs in Duval, 1 Clay, 1 Palm Coast – affecting 163,236 people)



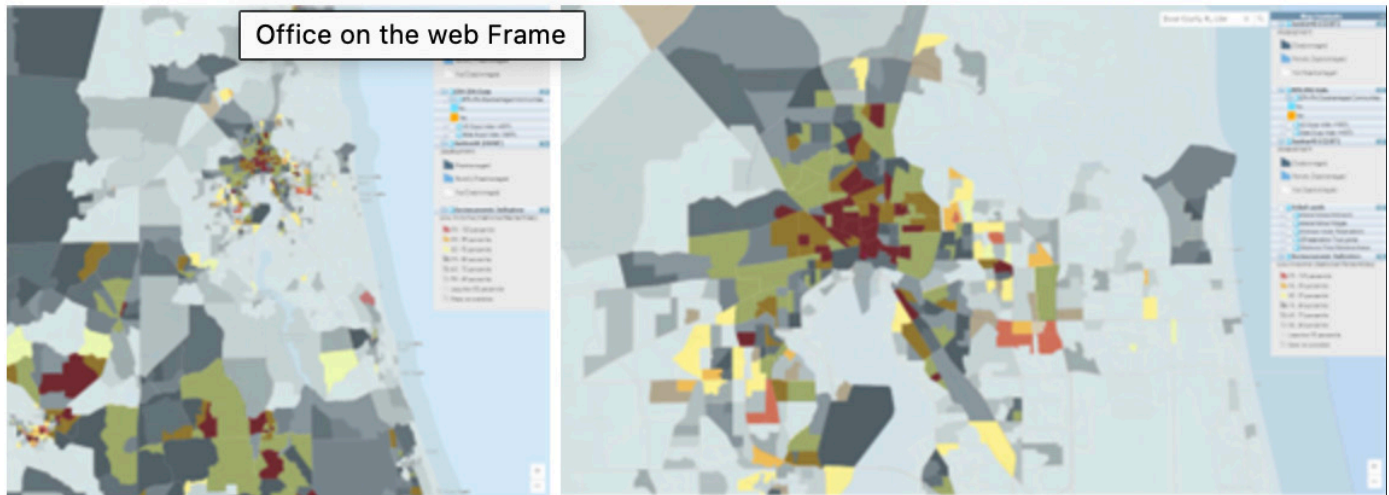
EPA EJ Screen NEFL MSA Map and Duval County Map of Proximity to Risk Management Plan (RMP) Facilities Burden (39 LIDACs in Duval; 1 St. Johns – affecting 150,280 people)



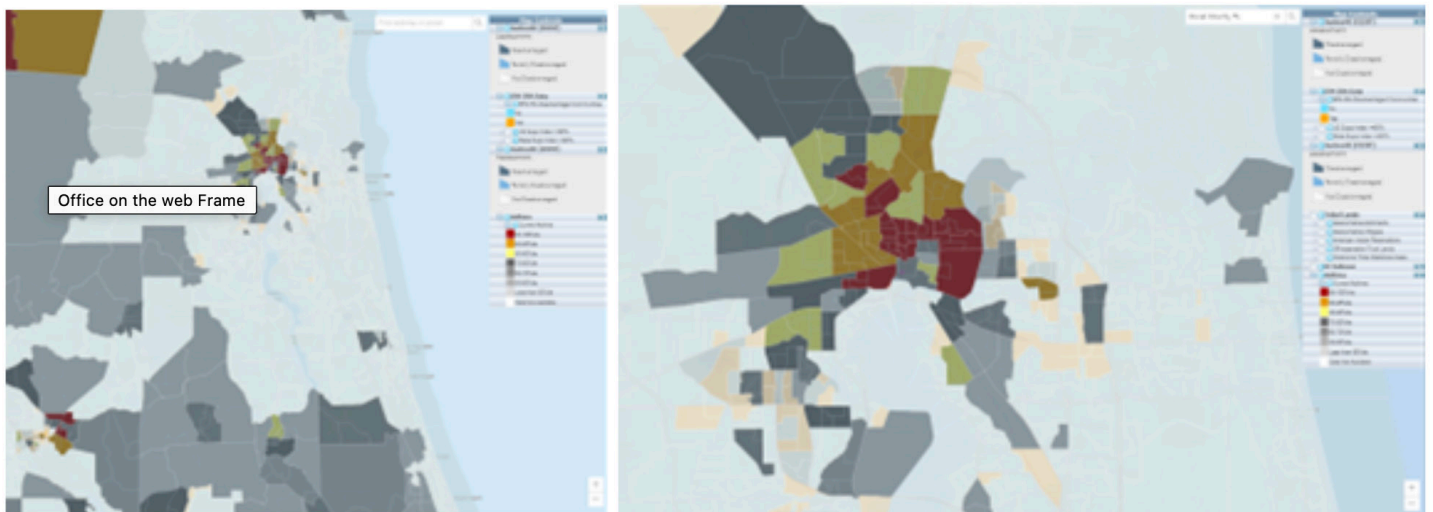
EPA EJScreen NEFL and Duval County Maps of Heart Disease Burden (23 LIDACs in Duval; 3 Palm Coast; 1 Clay; 1 St. Johns – affecting 109,445 people)



EPA EJScreen NEFL and Duval County Maps of Median Income Burden (26 LIDACs in Duval – affecting 98,578 people)



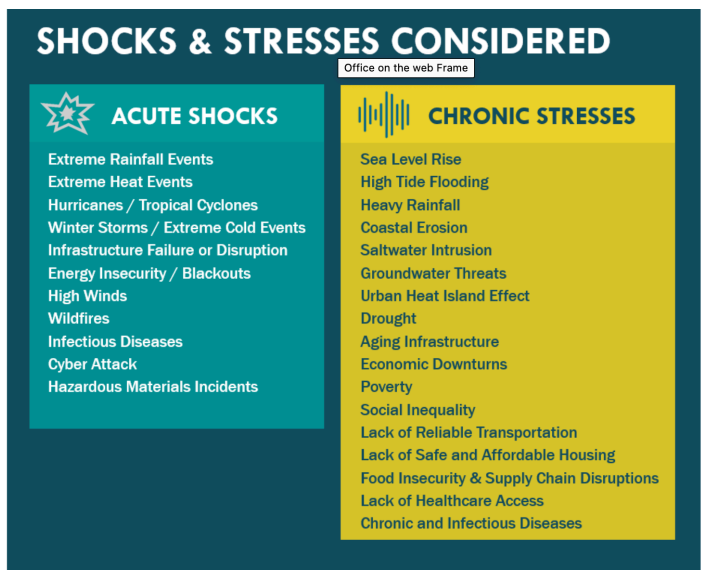
EPA EJScreen NEFL and Duval County Maps of Asthma Burden (23 LIDACs in Duval – affecting 82,706 people)



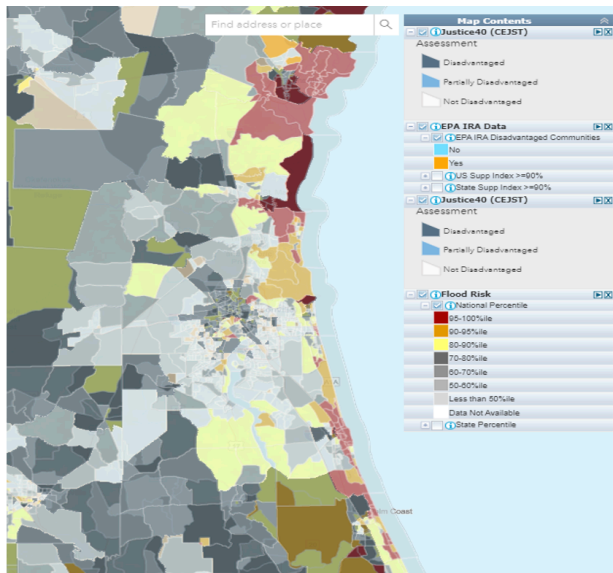
Climate Impacts and Risks

Like many regions, Northeast Florida is facing various climate impacts and risks that are expected to intensify with ongoing climate change. In 2023, the region benefited from studies completed for the City of Jacksonville’s first resilience plan that covers the next 50 years. Below is a quick chart from the plan outlining the region’s acute shocks and chronic stressors, as well as four maps from the EPA EJ Screen Mapping Tool demonstrating the four climate risks it measures – flooding, wildfire, 100-year floodplain, and sea level rise – and where these risks overlay with our regions LIDAC communities:

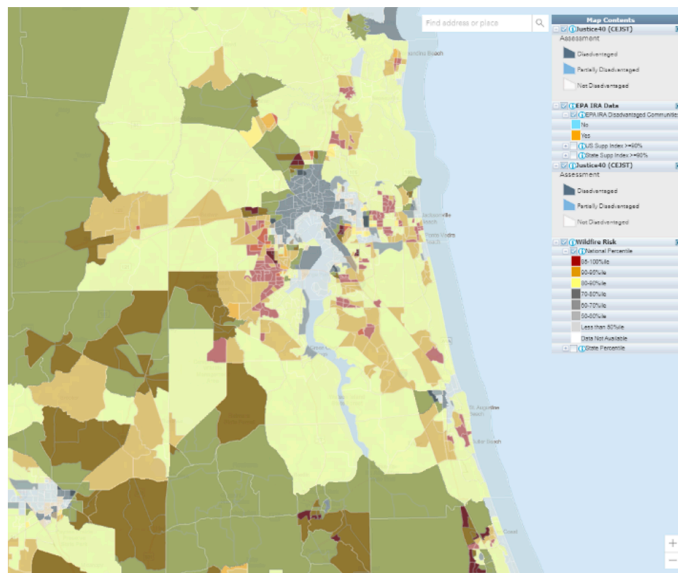
FIGURE 7 Duval County Acute Shocks and Chronic Stresses



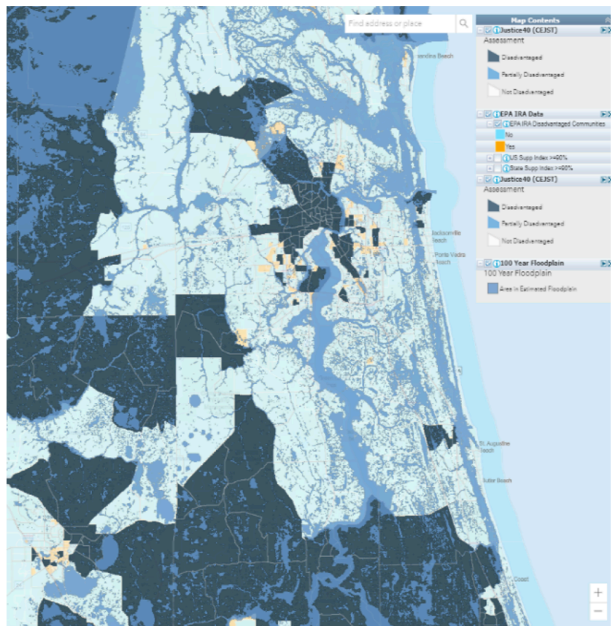
60. www.resilientjacksonville.com



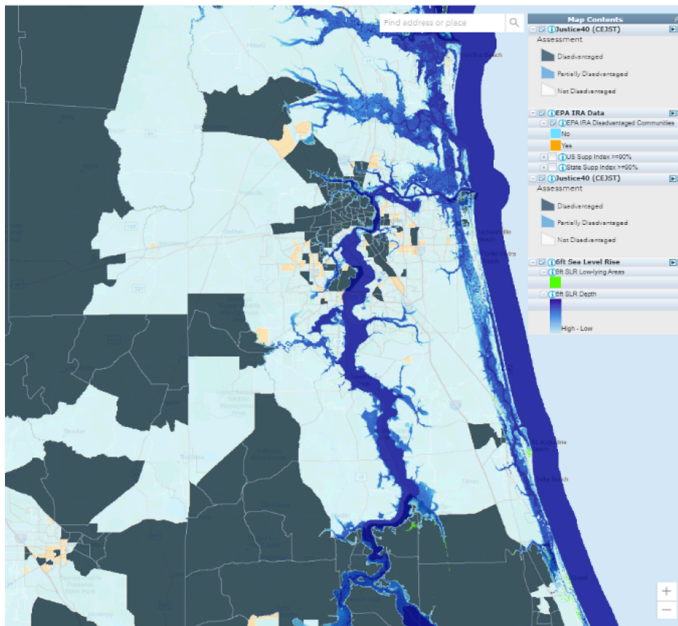
Flood Risk



Wildfire Risk



100-Year Floodplain



Sea Level Rise (6th Feet; NOAA)

LOW-INCOME AND DISADVANTAGED COMMUNITY (LIDAC) BENEFIT ANALYSIS

Impact of PCAP Implementation on LIDACs with Anticipated Benefits and Challenges

Table 15 LIDACs anticipated to be affected by implementing each priority measure included in this PCAP.

The anticipated benefits or potential disbenefits associated with measure implementation are also summarized in this section.

ELECTRICAL GRID MEASURE: INCREASE CLEAN ENERGY	
<p>Measure Description: Local utilities to reduce GHG emissions by increasing their percentage of clean energy</p> <p>Communities Impacted by this Measure: While it is unlikely that a utility will place one of its planned large solar farms directly within a LIDAC in NEFL MSA for direct benefits, the indirect benefits listed below will help many in the MSA.</p> <p>LIDAC Census Tracts Impacted: NEFL MSA Wide</p> <p>12003040201, 12019030102, 12019030103, 12019030104, 12019030400, 12019031104, 019031105, 12019031106, 12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12089050503, 12035060104, 12035060204, 12035060206, 12035060207, 12035060208, 12035060209, 12035060210, 12035060212, 12035060213, 12035060214, 12109020300, 12109021003, 12109021101</p>	
BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Reduced Energy Costs	Upfront Costs
Improved Health Outcomes	Citing and acquiring appropriate location
Increased Job Opportunities	Distribution Infrastructure
Improved energy Independence and Resilience	
NAVIGATING/MITIGATING THE CHALLENGES	
Customer Incentive Programs to increase demand for clean energy	
Community Solar Projects located in LIDACs	
Policy Support	
Infrastructure Improvements	
Education and Outreach	
Targeted Job Training	

BUILDING MEASURE: RESIDENTIAL ENERGY AUDIT and EFFICIENCY TOOLKIT

Measure Description: Host energy efficient and energy audit toolkits at public libraries for the public to check out as well as direct energy saving technology kits to pass out that include LED lightbulbs, smart power strips, and educational materials and resources (e.g., times and locations of workshops) in multiple languages.

Communities Impacted by this Measure: All LIDAC communities throughout the NEFL MSA will have access to these toolkits. It is vital to make tools and “how to” information freely and easily available to those who cannot afford to pay for a professional audit. The direct and indirect benefits of this measure are listed below.

LIDAC Census Tracts Impacted: NEFL MSA Wide wherever a library is located

12003040201, 12019030102, 12019030103, 12019030104, 12019030400, 12019031104, 12019031105, 12019031106, 12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12089050503, 12035060104, 12035060204, 12035060206, 12035060207, 12035060208, 12035060209, 12035060210, 12035060212, 12035060213, 12035060214, 12109020300, 12109021003, 12109021

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Increased Control and Empowerment	Lack of accessibility and equitable distribution
Reduced Electricity Bills	Limited scope and impact
Improved Comfort and Health	Lack of awareness and direct promotion
Reduced Environmental Impact	Limited internet access and digital divide
Increased community engagement, knowledge and trust	

NAVIGATING/MITIGATING THE CHALLENGES

Culturally sensitive education and outreach
Use multimedia and diverse tools and resources
Share success stories and pictures from within each community
Combine with incentives and financial assistance programs

BUILDING MEASURE: HIGH PERFORMING CENTERS TO BUILD COMMUNITY RESILIENCY

Measure Description: Retrofit community assets such as schools, community centers, critical facilities, and libraries that serve disadvantaged residents to be energy efficient and install solar with backup batteries where feasible. These facilities will ensure vulnerable residents have access to safe spaces with services following events such as hurricanes, tornados, and electric grid failures. If designed well, high performing centers to build community resiliency can equitably enhance community resilience while reducing GHG emissions and improving local quality of life. They are a smart local investment with the potential to reduce the burden on local emergency response teams, improve access to health improvement initiatives, foster greater community cohesion, and increase the effectiveness of community-centered institutions and programs.” (Source: USDN website)

Communities Impacted by this Measure: The community centers will be sited and managed within LIDAC communities in NEFL MSA. The direct and indirect benefits of this measure are listed below.

LIDAC Census Tracts Impacted: NEFL MSA Wide and wherever the identified community centers are located

12003040201, 12019030102, 12019030103, 12019030104, 12019030400, 12019031104, 12019031105, 12019031106, 12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12089050503, 12035060104, 12035060204, 12035060206, 12035060207, 12035060208, 12035060209, 12035060210, 12035060212, 12035060213, 12035060214, 12109020300, 12109021003, 12109021

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Enhanced community resilience and social cohesion	Initial siting, costs, and maintenance
Reduced energy bills for the municipality	Complex and/or multiple partnerships
Improved air quality and climate mitigation	Ongoing usefulness to the comm
Increased community empowerment and trust	
Increased services and support of the community	

NAVIGATING/MITIGATING THE CHALLENGES
Foster ongoing intentional community input of facility features, services, and programs
Verify accessibility and cultural sensitivity of facility, services, and programs
Create a long-term maintenance and sustainable funding source plan

BUILDING MEASURE: COMMERCIAL SOLAR

Measure Description: Place commercial large-scale solar in strategic locations throughout the NEFL MSA.

Communities Impacted by this Measure: Where possible the large-scale solar projects will be placed in or near a LIDAC community and where significant energy savings and GHG emission reductions can be achieved. The direct and indirect benefits of this measure are listed below.

LIDAC Census Tracts Impacted: NEFL MSA Wide and wherever a library is located

12003040201, 12019030102, 12019030103, 12019030104, 12019030400, 12019031104, 12019031105, 12019031106, 12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12089050503, 12035060104, 12035060204, 12035060206, 12035060207, 12035060208, 12035060209, 12035060210, 12035060212, 12035060213, 12035060214, 12109020300, 12109021003, 12109021101

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Reduced energy costs	Limited economic benefit sharing
Improved community resilience	Concerns about land use impact and negative aesthetics
Increased climate risk mitigation	Possible long-term gentrification and displacement impacts
Increased economic development and job creation	Concerns about equitable access to community
Enhanced skills development	

NAVIGATING/MITIGATING THE CHALLENGES

Foster ongoing intentional community input of facility features, services, and programs
Verify accessibility and cultural sensitivity of facility, services, and programs
Create a long-term maintenance and sustainable funding source plan

BUILDING MEASURE: MUNICIPAL BUILT ENVIRONMENT DECARBONIZATION

Measure Description: Reduce the embodied carbon in vertical and horizontal built environment in municipalities.

Communities Impacted by this Measure: Locating cool roofs, pavement, green infrastructure along with decarbonizing buildings in LIDAC communities throughout the City of Jacksonville, the City of Atlantic Beach and the City of St. Augustine will reduce urban heat impacts. The direct and indirect benefits of this measure are listed below.

LIDAC Census Tracts Impacted: LIDACs in the City of Jacksonville, the City of Atlantic Beach and the City of St. Augustine

12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12109021003, 12109020300

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Lower energy bills can free up resources for essential services	Limited economic benefit sharing
Improved public health in air quality and ventilation	Increased building costs
Increased local job creation and training opportunities	Ongoing maintenance and technology upgrade financial burden
Leadership by example encourages broader adoption of sustainable practices by businesses and residents	Limited access to new jobs and skills training
Increased climate risk mitigation	Disruption during implementation of horizontal project

NAVIGATING/MITIGATING THE CHALLENGES

Involve residents in the planning and decision-making process to ensure their needs and concerns are heard and addressed
Provide clear information on the time and length of disruption to residents and businesses by the project
If the project is community solar, prioritize high energy burden residents with targeted, sensitive outreach
Prioritize hiring and training residents and small businesses from disadvantaged communities for retrofitting and maintenance jobs
Clearly communicate project goals, benefits, and potential impacts to the community throughout the process
Consider expanding public transportation access to connect residents to municipal buildings

TRANSPORTATION MEASURE: NORTH FLORIDA TPO'S CLEAN FUELS INITIATIVE

Measure Description: Examine the operational and economic feasibility of transitioning fleets of various stakeholders in three counties to clean fuels and increase adoption of cleaner alternative fuels than traditional fossil fuels.

Communities Impacted by this Measure: Where possible, we will partner with stakeholders in fleets located in LIDAC communities. The direct and indirect benefits of this measure are listed below.

LIDAC Census Tracts Impacted: LIDACs in Duval, Nassau, and St. Johns counties

12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12089050503, 12109020300, 12109021003, 12109021101

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Lower energy bills can free up resources for essential services	Limited economic benefit sharing
Improved public health in air quality and ventilation	Increased building costs
Increased local job creation and training opportunities	Ongoing maintenance and technology upgrade financial burden
Leadership by example encourages broader adoption of sustainable practices by businesses and residents	Limited access to new jobs and skills training
Increased climate risk mitigation	Disruption during implementation of horizontal project

NAVIGATING/MITIGATING THE CHALLENGES

Involve residents in the planning and decision-making process to ensure their needs and concerns are heard and addressed
Provide clear information on the time and length of disruption to residents and businesses by the project
If the project is community solar, prioritize high energy burden residents with targeted, sensitive outreach
Prioritize hiring and training residents and small businesses from disadvantaged communities for retrofitting and maintenance jobs

TRANSPORTATION MEASURE: MASS TRANSIT EXPANSION AND MOBILITY HUB

Measure Description: Develop intercounty mass transit with a regional rail network and expanded bus express service. This will address the transportation GHG emissions from work commuter traffic from other counties into Duval County.

Communities Impacted by this Measure: Where possible, JTA will work with key stakeholders and local communities to be serviced by the mass transit expansion to design direct benefits for LIDAC communities. The direct and indirect benefits of this measure are listed below.

LIDAC Census Tracts Impacted: LIDACs in Baker, Clay, Duval, Nassau, and St. Johns counties

12003040201, 12019030102, 12019030103, 12019030104, 12019030400, 12019031104, 12019031105, 12019031106, 12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12089050503, 12109020300, 12109021003, 12109021101

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Improved air quality and public health	Upfront and ongoing costs
Reduced climate change impacts and risks	Probable disruption and inconvenience during implementation
Increased job creation, job opportunities, and economic development	Limited impact on employment for local residents if they are unaware of opportunities, lack skills, or face barriers to entry
Reduced transportation costs	Concerns about safety and security
Increased access to opportunities and quality of life	Concerns about accessibility and equitability (e.g., design for those with disabilities, limited mobility, those lacking language proficiency, or other special needs)
Enhanced public spaces	Potential disruption to local cultures and social fabrics
Enhanced community connections	Potential gentrification and displacement impacts
Potential revitalization and increased community development	Probable maintenance and operational challenges

NAVIGATING/MITIGATING THE CHALLENGES

Clearly communicate project goals, benefits, potential impacts, and community engagement opportunities throughout the process
Provide targeted training and job placement assistance for workers in LIDACs to ensure they benefit from the expansion
Continue to work on adding amenities to the transit experience (e.g., free Wi-Fi) to encourage people not to take their car
Create a sustainable, long-term funding plan

TRANSPORTATION MEASURE: COJ BICYCLE-PEDESTRIAN PROGRAMS

Measure Description: Increase active transportation mode share by expanding a safe and connected bicycle facilities network, expand/enhance a trail network that is comfortable, safe, and appropriate for all ages/abilities, and create an E-bike voucher program to provide modal options for underserved communities, offer residents and visitors alike a lower-emissions modal option for commuting, and construct shower/locker facilities for government offices, providing staff with facilities to support an elevation in active transportation.

Communities Impacted by this Measure: The majority of these programs will be located and focused on directly serving the 61 LIDACS in the City of Jacksonville. The direct and indirect benefits of this measure are listed below.

LIDAC Census Tracts Impacted: LIDACs in the City of Jacksonville

12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Increased access and mobility to jobs and those who cannot drive	Concerns about accessibility to paths and trails
Improved public health through more physical activity	Initial costs and construction disruptions
Reduced transportation costs	E-bike affordability and equitable access to charging infrastructure
Improved air quality and other environmental benefits	E-bike safety for riders and pedestrians
Enhanced community vitality, safety, and cohesion	Shower/locker facility utilization and costs
Enhanced public spaces	Potential disruption to local cultures and social fabrics
Enhanced community connections	Potential gentrification and displacement impacts
NAVIGATING/MITIGATING THE CHALLENGES	
Actively involve residents in planning and decision-making to ensure their needs and concerns are heard and addressed	
Design all elements with accessibility in mind, ensuring everyone can safely and comfortably use the new infrastructure	
Consider bike repair stations	
Prioritize safety through dedicated enforcement, lighting, and educational campaigns	

TRANSPORTATION MEASURE: FLEET TRANSITION FOR EVs

Measure Description: Decrease emissions generated by the transportation sector, improve the region’s air quality, and serve as a positive example for other entities to follow by transitioning public fleets to electric.

Communities Impacted by this Measure: The city EV fleet transitions will directly benefit their LIDACs with less air pollution. The DCPS plans to place their EV buses directly within school routes hoping to directly reduce asthma rates. Additional direct and indirect benefits of this measure are listed below.

LIDAC Census Tracts Impacted: LIDACs in Nassau County, the City of St. Augustine, the City of Jacksonville, the City of Atlantic Beach, Duval County Public School District

12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12089050503, 12109021003, 12109020300

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Improved air quality, respiratory health, and healthcare costs	Limited infrastructure
Reduced climate change risk	Potential job displacement in traditional fossil fuel sectors
Increased job creation and economic development	Anti-EV sentiment
Reduced noise pollution	
Reduced operating costs	
Potential increased resilience with two-way charging	

NAVIGATING/MITIGATING THE CHALLENGES

- Consider the long-term costs and accessibility of maintenance and repairs for EVs to ensure affordability
- Track the transition's impact with data and monitoring on disadvantaged communities and city employees and budget, including air quality, health outcomes, job creation, and economic savings, to adapt the approach as needed

INDUSTRY MEASURE: REDUCE MARITIME SECTOR EMISSIONS

Measure Description: Reduce emissions from the maritime sector, including Jones Act ocean-going vessels, cruise ships, and commercial harbor craft including reducing medium- and heavy-duty truck vehicle miles traveled, traffic congestion, idling, and queueing.

Communities Impacted by this Measure: The Jacksonville Port Authority (JAXPORT) headquarters, refrigerated services, and a marine terminal are in two LIDAC communities with many trucks and marine vessels going by on a daily basis. The other locations run by JAXPORT impact most of Duval County and some of Nassau County.

LIDAC Census Tracts Impacted: LIDACs in Duval and Nassau Counties including two LIDACs directly impacted in downtown Jacksonville

12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12089050503

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Improved local and regional air quality and health outcomes	Upfront costs in conversion and infrastructure
Increased climate change mitigation	Potential job displacement
Enhanced economic opportunities with job creation, upskilling, innovation, and new technologies	Long-term financial investment
Reduced noise pollution	State policies

NAVIGATING/MITIGATING THE CHALLENGES

Foster continual, transparent, and diverse multi-stakeholder engagement

Consider continual reinvestment in workforce development and new technologies

AFOLU MEASURE: PRESERVE AND EXPAND FOREST

Measure Description: Nassau County would like to acquire 100,000+ acres of land to preserve for wildlife and recreation.

Communities Impacted by this Measure: This measure will directly benefit the one LIDAC in Nassau County while indirectly benefiting the whole NEFL MSA.

LIDAC Census Tracts Impacted: LIDAC in Nassau County (12089050503)

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Expanded environmental protection	Potential maintenance cost burden
Enhanced flood mitigation	Potential loss of cultural significance
Improved public health	Potential livelihood loss (other uses of the land)
Increased recreational opportunities	Concerns about limited and equitable access
New educational opportunities for outdoor classroom work	
Potential economic development through ecotourism and sustainable forestry practices	
NAVIGATING/MITIGATING THE CHALLENGES	
Actively involve residents in identifying needs, concerns, and potential benefits of the project	
Conduct thorough assessments to understand the cultural significance of the land for potentially impacted communities	
Ensure accessible transportation options and programs exist to connect disadvantaged communities	
Regularly monitor the project's impact on the community and adapt the approach as needed	

WASTE and MATERIALS MANAGEMENT MEASURE: WASTEWATER TREATMENT EFFICIENCY UPGRADES

Measure Description: The City of Palm Coast wants to implement pipe and maintenance hole lining to mitigate the impact of stormwater inflow and infiltration. The project's primary goal is to enhance energy efficiency by minimizing stormwater infiltration during heavy rainfall events.

Communities Impacted by this Measure: All the LIDACs in the City of Palm Coast will directly benefit from this measure. Additional direct and indirect benefits are listed below.

LIDAC Census Tracts Impacted: LIDACs in the City of Palm Coast

12035060104, 12035060204, 12035060206, 12035060207, 12035060208, 12035060209, 12035060210, 12035060212, 12035060213, 12035060214

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Reduced flooding and property damage	Inequitable benefits if LIDACs are not prioritized
Improved public health	Limited scope does not include upstream issues
Enhanced quality of life	Upfront and ongoing maintenance costs
Improved infrastructure	Concerns about disruption and inconvenience
Potential job creation	Concerns about gentrification in the long-term
Probable municipal savings that can be used elsewhere	

NAVIGATING/MITIGATING THE CHALLENGES

Prioritize vulnerable communities
Implement a comprehensive plan that addresses upstream issues, integrates green infrastructure solutions like infiltration with traditional drainage improvements, and considers long-term climate change impacts
Clearly communicate project goals, benefits, and potential impacts to the community throughout the process. Address concerns and build trust through ongoing engagement
Track progress and verify city achieved energy efficiency benefits

WASTE and MATERIALS MANAGEMENT MEASURE: COMPOSTING and WASTE DIVERSION

Measure Description: Reduce methane emissions through composting and waste diversion.

Communities Impacted by this Measure: All the LIDACs in the City of Jacksonville, the City of Atlantic Beach, and the City of St. Augustine will directly benefit from this measure. Additional direct and indirect benefits are listed below.

LIDAC Census Tracts Impacted: LIDACs in the City of Jacksonville, the City of Atlantic Beach, and the City of St. Augustine

12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400, 12109021003, 12109020300

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Reduced flooding and property damage	Inequitable benefits if LIDACs are not prioritized
Improved public health	Limited scope does not include upstream issues
Enhanced quality of life	Upfront and ongoing maintenance costs
Improved infrastructure	Concerns about disruption and inconvenience
Potential job creation	Concerns about gentrification in the long-term
Probable municipal savings that can be used elsewhere	

WASTE and MATERIALS MANAGEMENT MEASURE: LANDFILL GAS RECOVERY and CONVERSION

Measure Description: Collect Landfill Gas (LFG) and reuse it in generators for power or purification and install a geosynthetic liner on top of the closed areas of the landfill to prevent gas emissions.

Communities Impacted by this Measure: All the LIDACs in the City of Jacksonville will directly benefit from this measure. Additional direct and indirect benefits are listed below.

LIDAC Census Tracts Impacted: LIDACs in the City of Jacksonville, the City of Atlantic Beach, and the City of St. Augustine lay downwind of a landfill.

12031000100, 12031000200, 12031000300, 12031000600, 12031001000, 12031001100, 12031001200, 12031001300, 12031001400, 12031001500, 12031001600, 12031002501, 12031002502, 12031002600, 12031002701, 12031002702, 12031002801, 12031002802, 12031002901, 12031002902, 12031010304, 12031010401, 12031010402, 12031010500, 12031010700, 12031010800, 12031010900, 12031011000, 12031011100, 12031011200, 12031011300, 12031011400, 12031011500, 12031011600, 12031011700, 12031011800, 12031011901, 12031012000, 12031012100, 12031012200, 12031012300, 12031012500, 12031012601, 12031012602, 12031012704, 12031012900, 12031013200, 12031013300, 12031013402, 12031013502, 12031013800, 12031013902, 12031013904, 12031014311, 12031015200, 12031015300, 12031015400, 12031015502, 12031015700, 12031015925, 12031016000, 12031016100, 12031016200, 12031016300, 12031016601, 12031016726, 12031016727, 12031017200, 12031017400

BENEFITS	POTENTIAL CHALLENGES/DISBENEFITS
Reduced greenhouse gas emissions	Concerns about ongoing environmental justice issues
Improved air quality and health outcomes	Concerns about unintended consequences
Renewable energy source	Lack of trust in institutions
Increased job creation and economic development	Transparency and trust
Potential revenue generation	Concerns about long-term maintenance and costs

NAVIGATING/MITIGATING THE CHALLENGES

Conduct a thorough environmental justice assessment to identify existing disparities and ensure the project does not exacerbate them
Prioritize hiring and training residents from the community for project jobs, creating local employment opportunities
Ensure a portion of the revenue generated from selling RNG is directed back to the community for investments in local infrastructure, social programs, or environmental initiatives
Develop a sustainable funding model for ongoing maintenance and ensure independent monitoring of environmental impacts and community health outcomes

COORDINATION AND OUTREACH

V. Coordination and Outreach

The Northeast Florida MSA conducted extensive intergovernmental coordination and outreach over six months to develop this PCAP. This section describes the framework NEFL MSA used to support robust and meaningful engagement strategies, ensure comprehensive stakeholder representation, and overcome obstacles to engagement, including linguistic, cultural, institutional, geographic, and other barriers.

FIGURE 8 Kids Hope Alliance Community Engagement event on 2/22/2024.



Identification of Stakeholders

NEFL MSA identified stakeholders: representatives of the entities, groups, and individuals whom the implementation of this PCAP may impact. Stakeholders include:

- Metropolitan planning organizations
- Transportation planning organizations
- Regional planning councils
- Economic development organizations
- Environmental advocates
- Industrial associations
- Utilities
- Agricultural and working lands groups
- Waste management entities
- Consumer advocates
- Local elected officials
- Community-based organizations
- Chambers of commerce
- Other interested organizations
- Residents of NEFL MSA

To identify stakeholders, NEFL MSA contacted local elected officials, community organizations, and advocacy organizations known to be interested in clean energy infrastructure and practices. The list of identified stakeholders as of the publication of this PCAP is included in the Acknowledgements. The City of Jacksonville, as the lead organization, will update this list of stakeholders as needed.

Interagency and Intergovernmental Coordination

As the lead agency, the City of Jacksonville contacted all the sustainability and resilience officers within the NEFL MSA to participate in a bi-weekly call and group on MS Teams. It was also created in partnership with the NEFL Regional Council, a NEFL CPRG Working Group made up of regional stakeholders across all sectors, including public, private, academia, and nonprofit subject matter experts. The group meets at least once a month to discuss progress on the CPRG and offer insight and feedback from different perspectives.

Outreach Plan

Effectively communicating to LIDACs the benefits of initiatives, such as reductions in GHG emissions, job creation, clean energy job training, decreased energy costs, green space creation, and stakeholder engagement, is crucial to capture their interest and engagement. Here is how we are trying to achieve these goals:

Transparent and Accessible Information:

We are providing concise and easily understandable information about the initiative and its benefits. To improve comprehension, we are using plain language, infographics, and visuals to break down complex concepts.

Tailored Messaging:

Customizing our communication to address the specific concerns and interests of LIDACs. We are trying to highlight how the initiative directly impacts their daily lives, communities, and well-being.

Storytelling:

Sharing success stories and case studies from similar communities or individuals who have benefited from the initiative, personalizing the narrative to make it relatable and emotionally engaging.

Community Representatives:

Identifying and involving trusted community representatives, including community leaders and influencers, to advocate for the initiative. These representatives can bridge the gap between the initiative and LIDACs, adding credibility and trust.

Interactive Workshops and Seminars:

Hosting workshops, seminars, or webinars in LIDAC communities to explain the benefits in detail. Encouraging participation by addressing questions and concerns from residents.

Visual Impact Assessment:

Providing visual representations, such as maps or graphs, to illustrate the reductions in GHGs, criteria pollutants, and hazardous air pollutants (HAPs) in specific communities or areas. Showing tangible improvements over time to build confidence in the initiative's effectiveness.

Job Creation Tracking:

Sharing data on the number of jobs created within identified communities due to the initiative and highlight success stories of individuals who have found employment opportunities within their own neighborhoods.

Clean Energy Training and Apprenticeships:

Showcasing the investment in clean energy job training and apprenticeship programs in LIDAC communities. Highlighting the success stories of participants who have improved their career prospects.

Energy Cost Reductions:

Providing data and examples of how the initiative has decreased energy costs for residents in LIDAC communities, using real-life utility bill comparisons to demonstrate savings.

Green Space Creation:

Emphasizing the creation of green spaces for urban heat island mitigation and their recreational and health benefits. Sharing before-and-after photos to illustrate the transformation.

Stakeholder Engagement:

Reporting on the number of stakeholder events, participants, and dollars spent to engage with organizations and residents in LIDAC communities. Sharing feedback and outcomes from these engagements to demonstrate a commitment to community input.

Qualitative Descriptions:

Using qualitative descriptions to capture the human and community-centric aspects of the initiative's impact. Sharing testimonials, quotes, or anecdotes from community members expressing their experiences and perspectives.

Feedback Mechanism:

Establishing an accessible feedback mechanism for LIDACs to ask questions, voice concerns, and share their own stories related to the initiative. Actively listening and responding to their feedback to build trust and show that their input matters.

Jobs Lost and Workforce Transition Strategies:

Challenge: Jobs lost due to changes in the economy or industry.

Strategy: Developing comprehensive workforce transition programs:

- **Training Programs:** Offering skill-building programs and vocational training tailored to the needs of the affected workforce.
- **Career Counseling:** Providing career counseling and guidance to help individuals identify new opportunities and navigate career transitions.
- **Job Placement Services:** Partnering with local businesses and organizations to create job placement initiatives for displaced workers.
- **Entrepreneurship Support:** Supporting individuals interested in starting their own businesses, including access to capital and resources.

Resistance to Infrastructure Development and Siting Strategies:

Challenge: Community resistance to infrastructure development projects.

Strategy: Implementing outreach and appropriate siting strategies:

- **Community Engagement:** Conducting regular community meetings to gather input and address concerns from residents.
- **Transparency:** Ensuring transparency in project planning and decision-making processes.
- **Impact Assessment:** Conducting comprehensive environmental and social impact assessments to identify and mitigate potential adverse effects.
- **Alternative Solutions:** Exploring alternative sites and technologies that minimize community disruption while achieving project goals.

Energy Security and Reliability Concerns for Intermittent Generation Assets:

Challenge: Concerns regarding the reliability of intermittent energy sources.

Strategy: Enhancing energy security and reliability through increased transmission and storage:

- **Grid Enhancements:** Upgrading grid infrastructure to accommodate intermittent generation and enhance grid resilience.
- **Battery Storage:** Deploying advanced battery storage solutions to store excess energy and provide backup during low-generation periods.
- **Distributed Energy Resources (DERs):** Encouraging the adoption of DERs like solar panels and home energy storage to empower communities and reduce dependence on the grid.
- **Backup Generation:** Developing contingency plans and backup generation options to address intermittent energy supply concerns during critical situations.

Gentrification and Strategies to Combat Displacement and Increased Cost of Living:

Challenge: Gentrification leading to displacement and increased living costs for current residents.

Strategy: Implementing strategies to combat gentrification and support existing residents:

- **Affordable Housing:** Developing affordable housing initiatives to ensure that long-term residents can continue to afford to live in their communities.
- **Rent Control:** Exploring policies like rent control or rent stabilization to protect residents from sudden increases in housing costs.
- **Economic Empowerment:** Invest in local businesses, job creation, and economic development within LIDACs to provide opportunities and support for residents.
- **Community Land Trusts:** Promote the establishment of community land trusts to maintain control over land and housing in the community's interest.

Establish a Clear Communication Plan:

Creating a communication plan outlining the methods and frequency of engagement with LIDACs. Ensure that it is accessible, transparent, and culturally sensitive. Developing a designated communication channel, such as a dedicated email address, phone line, or online platform, to facilitate direct and efficient communication between LIDACs, the lead agency, and its partners.

Regular Consultation Meetings:

Scheduling regular consultation meetings with LIDACs to discuss ongoing projects, policy developments, and program updates. These meetings should occur at intervals agreed upon with the LIDACs, considering their availability and preferences. Providing LIDACs with relevant documents, reports, and materials before these meetings to facilitate informed discussion.

LIDAC Representation:

Encouraging the representation of LIDAC members on relevant decision-making bodies, advisory committees, or working groups related to the project's implementation. This ensures their perspectives are integrated into critical decisions. Supporting LIDACs in building capacity, including providing training or resources, to enable them to participate in these roles effectively.

Community Engagement Events:

Organizing community engagement events, workshops, or public forums to involve a broader indigenous community in discussing the project's progress and impacts. Ensuring that these events are inclusive, culturally sensitive, and accessible.

Feedback Mechanisms:

Implementing feedback mechanisms to promptly capture input and concerns from LIDACs and establish a formal process for addressing and responding to feedback. Periodically assessing the effectiveness of engagement efforts through surveys or evaluations to identify areas for improvement.

Resource Allocation:

Allocating resources, such as funding, technical support, or administrative assistance, to enable LIDACs to participate and effectively contribute to the project's active implementation.

Document and Share Progress:

Maintaining records of all interactions and engagements with LIDACs, ensuring that these records are accessible and shared with the Indigenous communities. The hope is that this will build trust and transparency.

Flexibility and Adaptability:

Flexibility in adjusting the engagement approach based on the evolving needs and preferences of LIDACs. Understanding that engagement strategies may need to adapt as the project progresses.

Accountability and Reporting:

Establishing mechanisms for regular reporting on engagement activities and outcomes, both internally and externally. Ensuring progress is documented and communicated to all stakeholders, including Indigenous communities, regulatory bodies, and the public.

By implementing this comprehensive approach, the City of Jacksonville and its partners are trying to demonstrate their commitment to genuine collaboration and meaningful engagement with LIDACs throughout the project's implementation process, fostering a respectful and productive relationship.

Outreach and Coordination Documentation

Table 17 provides a log of interagency, intergovernmental coordination, and stakeholder and public engagement efforts associated with developing this PCAP. Meeting and outreach materials and resources are available at www.cleanairnortheastflorida.com.

Table 17 Community Outreach Events

Date	Topic	Organizations Involved	Coordination / Outreach Method	Location	Outcome(s) and Next Steps
11/1/23	Thriving Together: Culture and Community	NAACP and others	The NAACP recognized Community Leaders for their contributions to the community. Ashantae Green networked and talked about CPRG	Hyatt Regency Jacksonville Riverfront (225 East Coastline Drive Jacksonville, FL 32202)	Followed up with those interested in learning more about the CPRG
11/29/23	CPRG	Resilient First Coast Full Collaborative - Many regional stakeholders involved in sustainability and resilience	Direct invitations, emails, and phone calls; In-person	St. Johns County Emergency Management (100 EOC Dr, St Augustine, FL 32092)	Invited to join the NEFL CPRG Working Group
11/29/23	CPRG	National Association of County Agricultural Agents (NACAA)	Zoom meetings promoted via email and newsletter	Online	One-hour info and sharing call; followed up with those who wanted further information
1/03/24, 1/29/24	NEFL MSA CPRG Office Hours	NEFL MSA	Direct invitations to community influencers, email, and social media	Microsoft Teams	Answered questions, received feedback, encouraged continued involvement
1/05/24, 2/7/24, 3/25/24	NEFL Climate Pollution Reduction Grant Working Group	Northeast Florida Regional Council + Working Group Members	Monthly meetings	Microsoft Teams	Received draft PCAP feedback and encouraged completion of the survey
1/25/24	CPRG Subject Matter Expert Panel	COJ, Stakeholders	In mid-December, community members submitted 70+ regional GHG reduction strategies. These were evaluated during this meeting.	Ed Ball Building, Jacksonville, FL	Submitted strategies (Google Drive) were reviewed/ discussed
1/26/24, 2/9/24, 2/23/24	Together for Tomorrow: LIDAC Challenges and Opportunities	General public and specific climate experts and groups	Direct invitations to community influencers, email, and social media	Zoom	Received feedback on PCAP and general focus areas
2/09/24	Together for Tomorrow: LIDAC Challenges and Opportunities	General public and specific climate experts and groups	Direct invitations to community influencers, email, and social media	Zoom	Received feedback on GHG measures and additional needs in the MSA
2/15/24	NAACP Community Outreach Q and A	NAACP, NEFL Sierra Club, and Jax Climate Coalition	NAACP email invites	Zoom	Received direct feedback on GHG measures and additional stakeholders
2/22/24	Kids Hope Alliance	General public and specific climate experts and groups	Direct invitations to community influencers, email, and social media	Kids Hope Alliance 1095 A. Philip Randolph Blvd. Jacksonville, Florida 32206	Received feedback on PCAP and additional needs in the MSA

CONCLUSION

VI. Conclusion

The Clean Air Northeast Florida Regional PCAP represents a significant milestone as the first major deliverable to EPA under Phase 1 of the planning grant phase as part of the Climate Pollution Reduction Grants awarded to the City of Jacksonville in the Northeast Florida MSA. This narrative report includes a focused list of near-term, high-impact, implementation-ready actions to reduce greenhouse gases and a quantitative analysis of expected reductions. The PCAP is instrumental in laying the groundwork for NEFL's application for Phase II implementation funding grants, demonstrating the region's readiness to utilize federal funding effectively to meet climate goals by enhancing existing efforts. In addition to the PCAP, another critical deliverable in this initiative includes preparing for the CPRG Implementation Grant application. The compressed timeline for the PCAP's delivery by March 1, 2024, facilitated meaningful engagement with eligible applicants for this grant opportunity, further underscoring the plan's significance in driving forward climate action initiatives in the region.

Upon submitting the Implementation Grant application, the Clean Air Northeast Florida Team will continue developing the Comprehensive Climate Action Plan due in the summer of 2025. The CCAP aims to build upon the implementation of the PCAP to achieve the region's 2030 milestone and further our MSA's climate goals, particularly for 2040 and 2050.

If you have questions about this PCAP or suggestions for the upcoming CCAP and status report, contact Ashantae Green at CPRG@coj.net.



APPENDICES



Scan For Digital Report
cleanairnortheastflorida.com



*Clean Air Northeast Florida Regional Priority
Climate Action Plan
March 2024*