Town of Southwest Ranches
Advisory Board
Meeting Agenda

Tuesday, April 1, 2025
7:00 pm

Town Hall
13400 Griffin Road
Southwest Ranches, FL 33330-2628

Board Members
Harold Gubnitsky
Rose Allbritton
Debbie Green
Rick Conrad

Council Liaison
Council Member David S. Kuczenski, Esq.
Staff Liaison
Dan Stewart

A. ROLL CALL

B. PLEDGE OF ALLEGIANCE

C. AGENDA AS FOLLOWS
- **i. Approval of March 4, 2025 Minutes**

D. NEW BUSINESS
- **i. Zero Waste Advisory Board Meeting and Zero Waste Task Force alignment**
- **ii. April 1st and 2nd Zero Waste Forum**
- **iii. Town Birthday Party Planning**
- **iv. Confirmation of April Recycling Date**

E. OLD BUSINESS
- **i. Consultant RFP**

F. ITEMS FOR NEXT MEETING

G. COMMITTEE MEMBER COMMENTS

H. STAFF COMMENTS
- **i. Board Vacancy**
- **ii. WM Reuter Facility Tour Dates**

I. PUBLIC COMMENTS

J. ADJOURNMENT

PURSUANT TO FLORIDA STATUTES 286.0105, THE TOWN HEREBY ADVISES THE PUBLIC THAT IF A PERSON DECIDES TO APPEAL ANY DECISION MADE BY THIS BOARD OR COMMITTEE WITH RESPECT TO ANY MATTER CONSIDERED AT ITS MEETING OR HEARING, HE OR SHE WILL NEED A RECORD OF THE PROCEEDINGS, AND THAT FOR SUCH PURPOSE, THE AFFECTED PERSON MAY NEED TO ENSURE THAT A VERBATIM RECORD OF THE PROCEEDING IS MADE, WHICH RECORD INCLUDES THE TESTIMONY AND EVIDENCE UPON WHICH THE APPEAL IS TO BE BASED. THIS NOTICE DOES NOT CONSTITUTE CONSENT BY THE TOWN FOR THE INTRODUCTION OR ADMISSION OF OTHERWISE INADMISSIBLE OR IRRELEVANT EVIDENCE, NOR DOES IT AUTHORIZE CHALLENGES OR APPEALS NOT OTHERWISE ALLOWED BY LAW.

Town of Southwest Ranches
Zero Waste Advisory Board
Minutes

March 4, 2025
7:00 pm

Board Members	**Council Liaison**	**Staff Liaison**
Rose Allbritton, Rick Conrad, Debbie Green, Harold Gubnitsky	David Kuczenski	Dan Stewart

Members present:
Rose Allbritton
Rick Conrad
Debbie Green

Members absent:
Harold Gubnitsky

Staff present:
Dan Stewart

Council present:
Jim Allbritton
Bob Hartmann
David Kuczenski

Others present:
See attendance sheet

Call to order at 7:03 PM

The members present reviewed the minutes of the February 2025 meeting.

Rose Allbritton motioned to approve the February 2025 minutes. Rick Conrad seconded, and the motion passed unanimously.

Alessia addressed the board and thanked the board for the opportunity. She gained a great deal of knowledge and great learning experience. Unfortunately, due to all the demands of being a senior in high school and college enrollment process she was not able to continue on the board. She will continue to be involved whenever she is able.

Zoom presentation by Elizabeth DeWitt and Barbara Herrera in regards to Florida Beverage and Single use plastics. Dawn McCormick gave us a WM overview; They are service provider for 12 cities in Broward County. They are recycling processors for 21 cities in Broward County. There is a new $80m new recycling facility adjacent to the current one. This will be the largest volume recycling facility of WM and one of the largest in North America. Expect to be fully operational in Q1 2026. This facility will include a big educational area for tours. WM has lots of educational opportunities at wm.com/recycleright. Another investment made in Broward County is for $30m for construction & demolition debris recycling. She gave us the WM spin on their request to Broward County to increase the landfill. The Solid Waste Authority of Broward County had requested that Broward County commission not approve the WM request until the master plan was complete. Now they have taken an asset off the table of what could have been used for resource recovery facility or other. The County Commission's approval also allows for the increase in height of the landfill out by us. Elizabeth DeWitt is president of Florida Beverage Assoc. This group includes non-alcoholic beverages, such as Dr Pepper, Coca Cola, Pepsi… Issues that all are aligned are health and wellness and sustainability. They have grants that can be applied for sustainability/recycling projects. Every botte back initiative is focused on keeping bottles and cans out of the environment. They use rPET plastics, 100% recycled cans. Raising awareness and supporting recycling by promoting during the Super Bowl and morning shows. Partners with

World Wildlife Fund to measure the reduction of the plastic footprint. Florida is the only state that has built a coalition. They had a recycle project in Jacksonville, where they had a certain community, where they tagged the recycling bins with happy face or what was put in that contaminated the recycle bin. Barbara gave kudos to SWR for its efforts to become more sustainable and lead by example.

Rick Conrad motioned to publish the bullet points below in the March Newsletter and for Debbie to coordinate with Town staff for the article to be included in the Town's March Newsletter. Rose Allbritton seconded, and the motion passed unanimously.

Kudos to SWR for efforts in sustainability and lead by example
Will look into Florida Beverage Association's "Every Bottle Back" program
Continue to look at possible grant opportunities and partnering with other municipalities
Look at possible programs to bring to schools in our area
Invite residents to attend monthly advisory board meeting and input

Old Business – to follow up on RFP draft to be presented next meeting

Staff Comments – There is a board vacancy to be filled. Rancher Academy will be held on March 12th at Town Hall from 7-9pm and March 19th

Next Zero Waste Broward Task Force Meeting will be held April 9th

Next meeting April 1st

There being no further business to discuss, the meeting adjourned at 8:26pm.

BUBBL'R BUBBL'R Sparkling Water Bubbles with benefits!

Sponsored

Open Water

Open Water | Still Canned Water with Electrolytes in 12-oz Aluminum Cans (4 Cases, 48 cans - Still) | BPA-free and Eco friendly

☆ (No ratings yet)

Count Per Pack: 48

12	24	48
$19.99	$34.99	$59.99

About this item

- Water, Electrolytes
- More ocean. Less plastic. Carbon neutral. Purified water. Climate Neutral Certified. The most recycled. Highest post-consumer content. Infinitely recyclable. Climate neutral. 1% for the planet.
- CLIMATE NEUTRAL CERTIFIED - We are the first bottled water company to go Climate Neutral, that means that we are measuring, reducing, and offsetting all of the carbon emissions that we create as a company, from powering our team's computers to producing our bottles and cans. Additionally, we are a 1% for the Planet member with ...

View more

$59.99

Price when purchased online

Free shipping Free 30-day returns

Add to cart

How you'll get this item:

Shipping	Pickup	Delivery
Arrives Apr 2 Free	Not available	Not available

Pembroke Pines, 33028 Change

Arrives by Wed, Apr 2 | More options

Sold and shipped by Open Water

★★★☆☆ 2 seller reviews

Free 30-day returns Details

Add to list Add to registry

Best seller

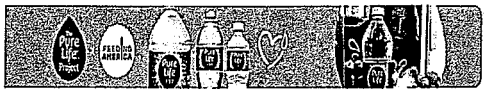
Sponsored

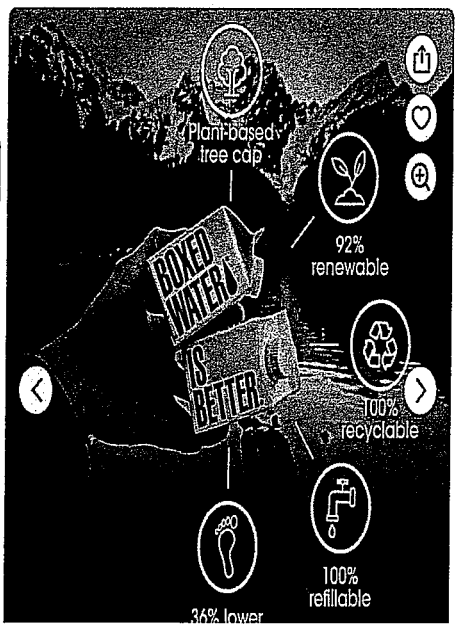
$12.47 8.1 ¢/fl oz

Liquid Death Mountain Water,

You hydrate. We donate. Each purchase gives 5 meals.

Sponsored





Boxed Water

Boxed Water 8.5 Oz. (24 Pack) – Purified Drinking Water In 92% Plant-Based Boxes, 100% Recyclable, Bpa-Free, Refillable Cartons, Sustainable Alternative To Plastic Bottled Water, Mini Water For Kids

☆ (No ratings yet)

About this item

- 100% PURE, REFRESHING WATER – With Boxed Water Is Better, you can enjoy 100% purified water with no added minerals – in the most renewable water containers in the industry; the mini sized waters are a sustainable option for kids lunches and events
- MINI PLANT-BASED BOXES – Better than bottled or canned water, our case of water contains renewable, reusable boxes made of paper from sustainable, well-managed forests; plus, the 92% plant-based box with a bioplastic cap is BPA free and 100% recyclable...

View more

$39.00

Price when purchased online

Free shipping Free 30-day returns

Add to cart

How you'll get this item:

Shipping	Pickup	Delivery
Arrives Apr 17 Free	Not available	Not available

Pembroke Pines, 33028 Change

Arrives by Thu, Apr 17 | More options

Only 1 left

Sold and shipped by wangzhihao

City of Deerfield Beach

150 NE 2nd Ave
Deerfield Beach, FL
33441
954-480-4200

Face Sheet
File Number: I.D. 2023-2117

Agenda Date: 9/13/2023

Status: CONSENT - AGREEMENTS & EXPENDITURE REQUESTS

In Control: City Commission

Title
Resolution 2023/ - A Resolution of the City Commission of the City of Deerfield Beach, Florida, approving a work authorization with APTIM Environmental & Infrastructure, LLC, to provide professional engineering services to develop a city sustainability roadmap and greenhouse gas inventory in an amount not to exceed $50,000.00; providing for execution and an effective date. *(Funds from Account #001-4553-539-32-99 - Coastal & Waterways/Other Contractual Services)*

Recommended Action
Commission to vote on Resolution

Voting Requirement
Adoption requires a 3/5 vote of the City Commission

Fiscal ImpactBody
Cost: $50,000
Account Number: 001-4553-539-32-99
Account Name: Coastal & Waterways/Other Contractual Services

Background/History
In 2017, the City developed a high-level sustainability plan outlining past and ongoing initiatives as well as planned initiatives. Subsequently, several of those projects and others have been implemented including municipal building efficiency upgrades, solar installation, compressed natural gas fleet build-out, composting and more.

Current Activity
The City is now seeking a more defined strategy to continue growing the sustainability program, identify effective and efficient projects to implement, and create a healthy community and environment for years to come.

Pursuant to Request for Qualifications #RFQ #21-11-IG (the “RFQ”) and Section 287.055, Florida Statute (the “CCNA”), the City entered into Continuing Contracts with qualified firms for the provision of Architectural and Engineering Services.

In accordance with the RFQ and the City’s CCNA project process, the City considered multiple firms from the RFQ continuing contract pool for the development of a municipal operations greenhouse gas inventory and sustainability roadmap. APTIM Environmental & Infrastructure, LLC was selected as the most qualified firm to provide the consulting services for this project. APTIM’s proposal includes data collection and analysis, key performance indicator development, stakeholder interviews and workshops, risk analysis, and project implementation plans.

APTIM Environmental & Infrastructure, LLC submitted a proposal with a lump sum cost of $50,000, to

be billed based on each defined scope task.

Recommendation
It is recommended the City Commission of the City of Deerfield Beach approve a work authorization with APTIM Environmental & Infrastructure, LLC for professional consulting services for the sustainability roadmap and greenhouse gas inventory.

RESOLUTION NO. 2023/

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF DEERFIELD BEACH, FLORIDA, APPROVING A WORK AUTHORIZATION WITH APTIM ENVIRONMENTAL & INFRASTRUCTURE, LLC, TO PROVIDE PROFESSIONAL ENGINEERING SERVICES TO DEVELOP A CITY SUSTAINABILITY ROADMAP AND GREENHOUSE GAS INVENTORY IN AN AMOUNT NOT TO EXCEED $50,000.00; PROVIDING FOR EXECUTION AND AN EFFECTIVE DATE

WHEREAS, in 2017, the City developed a high-level sustainability plan outlining past and ongoing initiatives as well planned initiatives; and

WHEREAS, subsequently, several of those projects and others have been implemented including municipal efficiency upgrades, solar installation, compressed natural gas fleet build-out, and composting; and

WHEREAS, in order to further the City's sustainability plan and program, the City has determined that a more defined strategy is necessary to identify effective and efficient projects to implement, and create a healthy community and environment for years to come; and

WHEREAS, pursuant to Request for Qualifications #2021-11-IG (the "RFQ") and Section 287.055, Florida Statutes, the City entered into multiple continuing contracts with qualified firms for the provision of professional architectural and engineering consulting services on an as needed basis, including a continuing contract with APTIM Environmental & Infrastructure, LLC, ("APTIM") dated April 12, 2021; and

WHEREAS, the Department of Sustainable Management (the "Department") requested a proposal from APTIM for the Project, which will consist of the development of a sustainability roadmap and greenhouse gas inventory that includes data collection and analysis, key performance indicator development, stakeholder interviews and workshops, risk analysis, and project implementation plans (the "Services"); and

WHEREAS, APTIM submitted its proposal to the Department and the Department negotiated the project scope and fee in the amount of $50,000.00 with APTIM, which staff has determined to be fair and reasonable and in accordance with industry standards; and

WHEREAS, the City desires to issue a Work Authorization to APTIM under the terms and conditions of the Continuing Contract and the proposal attached as Exhibit "A" to the Work Authorization, in an amount not to exceed $50,000.00; and

WHEREAS, staff recommends the City Commission approve and authorize execution of the Work Authorization with APTIM, attached as Exhibit "1", for the Services in an amount not to exceed $50,000.00.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF DEERFIELD BEACH, FLORIDA, AS FOLLOWS:

Section 1. The above referenced "Whereas" clauses are true and correct and made a part of this Resolution.

Section 2. The City Commission hereby approves the Work Authorization with APTIM, attached as Exhibit "1", for the Services for the Project in an amount not to exceed $50,000.00.

Section 3. The City Manager is hereby authorized to execute the Work Authorization with APTIM, attached as Exhibit "1", consistent with the terms of the Continuing Contract, together with such additional terms as are acceptable to the City Manager and approved as to form and legal sufficiency by the City Attorney.

Section 4. The appropriate City officials are authorized to take all necessary steps to implement the aims of this Resolution.

Section 5. This Resolution shall become effective immediately upon adoption.

PASSED AND ADOPTED THIS ____ DAY OF _____, 2023.

CITY OF DEERFIELD BEACH

_____
BILL GANZ, MAYOR

ATTEST:

_____
HEATHER MONTEMAYOR, CITY CLERK

EXHIBIT 1

WORK AUTHORIZATION BETWEEN THE CITY OF DEERFIELD BEACH AND APTIM ENVIRONMENTAL & INFRASTRUCTURE, LLC FOR PROFESSIONAL ENGINEERING SERVICES

This Work Authorization is entered into this ____ day of _____, 2023, by and between City of Deerfield Beach, Florida, a municipal corporation of the State of Florida, (the "City") and APTIM Environmental & Infrastructure, LLC., a Foreign Limited Liability Company authorized to do business in the State of Florida, (the "Consultant").

RECITALS

WHEREAS, the City and the Consultant entered into a master CCNA continuing services contract dated April 12, 2021 pursuant to RFQ #21-11-IG, (the "Continuing Contract") and Consultant has been approved to provide the services contemplated herein; and,

WHEREAS, the City and the Consultant desire to enter into this Work Authorization for the Consultant to perform professional engineering services as more specficially set forth in Exhibit "A" of this Work Authorization .

NOW, THEREFORE, in consideration of the mutual terms and conditions, promises, and covenants, hereinafter set forth, City and Consultant agree as follows:

SECTION 1
RECITALS

The above recitals are acknowledged and incorporated herein to this Work Authorization.

SECTION 2
SCOPE OF SERVICES

Consultant agrees to perform certain professional engineering services for the City, as more specifically described in the Scope of Services attached as Exhibit "A" to this Work Authorization (the "Services"), and in accordance with the terms and conditions set forth herein and in the Continuing Contract, of which by this reference are incorporated into this Work Authorization in its entirety during the Term and within the timeline provided for in this Work Authorization.

SECTION 3
COMPENSATION

In consideration for the Services to be performed by Consultant, the City agrees to pay Consultant an amount not-to-exceed $50,000.00 as further detailed in Exhibit "A". Compensation due to the Consultant shall be payable within 30 calendar days following submission of a proper invoice by the Consultant to the City. In the event of City's termination of this Work Authorization prior to the end of the Work Authorization Term pursuant to Section 5, City shall pay Consultant on a pro-rata basis for the Services performed by Consultant prior to the City's termination of this Work Authorization.

SECTION 4
TERM OF WORK AUTHORIZATION

The term of this Work Authorization shall commence upon the date of execution hereof and shall remain in effect until the Services are completed to the City's satisfaction (the "Term"), unless terminated earlier pursuant to Section 5 of this Work Authorization.

SECTION 5
TERMINATION OF WORK AUTHORIZATION

City may terminate this Work Authorization for convenience by giving the Consultant 30 days' advance written notice. The termination of this Work Authorization shall not relieve either party of any liability that accrued prior to such termination and any such accrued liability shall survive the termination of this Work Authorization.

SECTION 6
CONTINUING CONTRACT

The Services to be provided by Consultant pursuant to this Work Authorization shall comply with all of the terms and conditions set forth in the Continuing Contract between City and Consultant, which by this reference is incorporated into this Work Authorization in its entirety. In the event there is a conflict between the terms of this Work Authorization and the Continuing Contract, the terms of the Continuing Contract shall prevail.

SECTION 7
INDEPENDENT CONSULTANT

Consultant is an independent Consultant under this Work Authorization. Services provided by Consultant shall be by employees or sub-consultants of Consultant and subject to supervision by Consultant, and not as officers, employees or agents of the City. Personnel policies, tax responsibilities, social security, health insurance, employee benefits, travel, per diem policy, and purchasing policies under the Work Authorization shall be the sole responsibility of Consultant. Consultant shall have no rights under the City's worker's compensation, employment, insurance benefits or similar laws or benefits.

SECTION 8

INDEMNIFICATION / HOLD HARMLESS CLAUSE

Consultant shall indemnify and hold harmless City, its officers and employees from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorneys' fees, to the extent caused by the negligence, recklessness or intentionally wrongful conduct of Consultant, and other persons employed or utilized by Consultant in the performance of this Work Authorization. The provisions of this section shall survive the expiration or earlier termination of this Work Authorization. To the extent considered necessary by Contract Administrator and City Manager, any sums due Consultant under this Work Authorization may be retained by City until all of City's claims for indemnification pursuant to this Work Authorization and the Services provided have been settled or otherwise resolved, and any amount withheld shall not be subject to payment of interest by City. Nothing in this Work Authorization or the Continuing Contract shall be deemed or treated as a waiver by the City of any immunity which it is entitled by law, including but not limited to the City's sovereign immunity as set forth in Section 768.28, Florida Statutes.

SECTION 9
INSURANCE

9.1 The CONSULTANT shall satisfy the insurance requirements stated herein. The CONSULTANT shall not commence the work or otherwise perform the work as required by the applicable Work Authorization and/or Notice to Proceed until the requirements stated herein are met and the Certificate(s) of Insurance is approved by the CITY. The CONSULTANT shall assume full responsibility and expense to obtain all necessary insurance.

9.2 General

9.2.1 The CONSULTANT shall furnish to the Contract Administrator a Certificate of Insurance or endorsements evidencing the insurance coverage specified herein within fifteen (15) calendar days after the effective date of this Agreement. The required Certificates of Insurance shall name the types of policies provided, refer specifically to the Agreement, and state that such insurance is as required by this Contract. CONSULTANT's failure to provide to CITY the Certificates of Insurance or endorsements evidencing the insurance coverage within fifteen (15) calendar days shall provide the basis for the termination of the Agreement.

9.2.2 Such policy or policies shall be without any deductible amount unless otherwise noted in this Agreement and shall be issued by approved companies authorized to do business in the State of Florida, and having agents upon whom service of process may be made in Broward County, Florida. CONSULTANT shall pay all deductible amounts, if any. CONSULTANT shall

specifically protect CITY and the Deerfield Beach City Commission by naming CITY and the Deerfield Beach City Commission as additional insured under the Commercial Liability Policy, Business Automobile Liability policy as well as on any Excess Liability Policy coverage.

9.2.3 Coverage is not to cease and is to remain in force (subject to cancellation notice) until all performance required of CONSULTANT is complete including all renewal terms. All policies must be endorsed to provide CITY with at least thirty (30) days' notice of expiration, cancellation and/or restriction. If any of the insurance coverages will expire prior to the completion of any Project, copies of renewal policies shall be furnished at least thirty (30) days prior to the date of their expiration.

9.2.4 CITY reserves the right to review and revise any insurance requirements at the time of renewal or amendment of this Contract, including, but not limited to, deductibles, limits, coverage, and endorsements based on insurance market conditions affecting the availability or affordability of coverage, or changes in the scope of work or specifications that affect the applicability of coverage. If CONSULTANT uses a Subconsultant, CONSULTANT shall ensure that Subconsultant names CITY and the Deerfield Beach City Commission as additional insured under the Commercial Liability Policy as well as on any Excess Liability Policy coverage.

9.3 CONSULTANT shall, at a minimum, provide, pay for, and maintain in force at all times during the term of this Agreement the following insurance:

Commercial Liability Insurance - A Commercial Liability Insurance Policy shall be provided which shall contain limits of no less than One Million Dollars ($1,000,000.00) per occurrence for bodily injury liability, personal injury liability and property damage liability on a per project basis, and shall contain limits of no less than a Two Million Dollars ($2,000.000.00) aggregate. Coverage must be afforded on a form no more restrictive than CG 20 10 10 01 and CG 20 37 10 01 Commercial Liability Policy, without restrictive endorsements, as filed by the Insurance Services Office and must include: premises and operations, independent contractors, products and/or completed operations for contracts, broad form contractual coverage applicable to this specific Contract including any hold harmless and/or indemnification Contract, personal injury coverage with employee and contractual exclusions removed and policy limits shall be applied on a primary and non-contributory basis.

Professional Liability (Errors & Omissions) Insurance - Professional Liability Insurance with the limits of liability provided by such policy for each claim and on a claim made basis or on an occurrence basis to be no less than one million Dollars ($1,000,000) per occurrence with a limit of no less than two million dollars ($2,000,000) aggregate with a deductible per claim not to exceed ten percent (10%)

of the limit of liability. CONSULTANT shall notify the CITY in writing within thirty (30) days of any claim filed or made against its Professional Liability Insurance Policy. CONSULTANT acknowledges that the CITY is relying on the competence of the CONSULTANT to design a project to meet its functional intent. If it is determined during construction of a project that changes must be made due to CONSULTANT's negligent errors and omissions, CONSULTANT shall promptly rectify them at no cost to CITY and shall be responsible for additional costs, if any, of a project to the proportional extent caused by such negligent errors or omissions.

Business Automobile Liability - Business Automobile Liability shall be provided with minimum limits of One Million Dollars ($1,000,000.00) per occurrence or combined single limit for Bodily Injury Liability and Property Damage Liability. Coverage must be afforded on a form no more restrictive than the latest edition of the Business Automobile Liability policy, without restrictive endorsements, as filed by the Insurance Services Office, and must at a minimum include liability coverage symbols: 2 (owned vehicles), 8 (hired vehicles) and 9 (non-owned vehicles).

Workers Compensation Insurance - Workers' Compensation insurance to apply for all employees in compliance with Chapter 440, Florida Statutes, as may be amended from time to time, the "Workers' Compensation Law" of the State of Florida, and all applicable Federal laws. In addition, the policy(ies) must include employers' liability with a limit of One Million Dollars ($1,000,000.00) each accident, One Million Dollars ($1,000,000.00) aggregate limit by disease and One Million Dollars ($1,000,000.00) each employee by disease. Additionally, if there will be operations undertaken on, about or over navigable waterways, evidence of a coverage endorsement for U.S. Longshoremen and Harbor Workers Act (USL&H), and/or Jones Act, for maritime laws coverage shall be included. The Policy shall include a waiver of subrogation for all liability arising out of this contract. If exempt for Worker's Compensation, proper documentation shall be provided.

SECTION 10
NON-APPROPRIATION OF FUNDS

In the event no funds or insufficient funds are appropriated and budgeted or are otherwise unavailable in any fiscal year for payments due under this Work Authorization, then the City, upon written notice to Consultant of such occurrence, shall have the unqualified right to terminate this Work Authorization without any penalty or expense to the City.

SECTION 11
MISCELLANEOUS

Consultant shall, without additional expense to the City, be responsible for paying any taxes, obtaining any necessary licenses and for complying with all applicable federal, state, county, and municipal laws, ordinances and regulations in connection with the performance of the Services specified herein.

SECTION 12
AUDIT AND INSPECTION RIGHTS

12.1 The City may, at reasonable times, and for a period of up to three (3) years following the date of final performance of Services by Consultant under this Work Authorization, audit, or cause to be audited, those books and records of Consultant that are related to Consultant's performance under this Work Authorization. Consultant agrees to maintain all such books and records at its principal place of business for a period of three (3) years after final payment is made under this Work Authorization.

12.2 The City may, at reasonable times during the term hereof, perform such inspections, as the City deems reasonably necessary, to determine whether the services required to be provided by Consultant under this Work Authorization conform to the terms of this Work Authorization. Consultant shall make available to the City all reasonable assistance to facilitate the performance of inspections by the City's representatives.

SECTION 13
AMENDMENTS AND ASSIGNMENT

13.1 This Work Authorization together with Exhibit "A" and all negotiations and oral understandings between the parties are merged herein. The terms and conditions set forth in this Work Authorization supersede any and all previous agreements, promises, negotiations or representations, except as otherwise provided in Section 6. Any other agreements, promises, negotiations or representations not expressly set forth in this Work Authorization are of no force and effect.

13.2 No modification, amendment or alteration of the terms and conditions contained herein shall be effective unless contained in a written document executed with the same formality as this Work Authorization.

13.3 Consultant shall not transfer or assign the performance of Services called for in the Work Authorization without the prior written consent of the City, which may be withheld or conditioned in the City's sole discretion.

SECTION 14
NOTICES

Whenever either party desires to give notice to the other, it must be given by written notice in accordance with the requirements of Notices section of the Continuing Contract.

SECTION 15
GOVERNING LAW AND VENUE

This Work Authorization shall be construed in accordance with, and governed by, the laws of the State of Florida. Venue for any action arising out of, or relating to this Work Authorization shall be in Broward County, Florida.

SECTION 16
HEADINGS, CONFLICT OF PROVISIONS, WAIVER OR BREACH OF PROVISIONS

Headings are for convenience of reference only and shall not be considered in any interpretation of this Work Authorization. In the event of conflict between the terms of this Work Authorization and any terms or conditions contained in any attached documents, the terms in this Work Authorization shall prevail. No waiver or breach of any provision of this Work Authorization shall constitute a waiver of any subsequent breach of the same or any other provision, and no waiver shall be effective unless made in writing.

SECTION 17
NON-DISCRIMINATION

Consultant represents and warrants to the City that Consultant does not and will not engage in discriminatory practices and that there shall be no discrimination in connection with Consultant's performance under this Work Authorization on account of race, age, religion, color, gender, sexual orientation, national origin, marital status, physical or mental disability, political affiliation or any other factor which cannot be lawfully used as a basis for delivery of services. Consultant further covenants that no otherwise qualified individual shall, solely by reason of his/her race, age, religion, color, gender, sexual orientation, national origin, marital status, physical or mental disability, political affiliation or any other factor which cannot be lawfully used as a basis for delivery of services, be excluded from participation in, be denied services, or be subject to discrimination under any provision of this Work Authorization.

SECTION 18
PUBLIC RECORDS

Consultant understands that the public shall have access, at all reasonable times, to all documents and information pertaining to City contracts, subject to the provisions of Chapter 119, Florida Statutes, and agrees to allow access by the City and the public to all documents subject to disclosure under applicable law. Consultant's failure or refusal to comply with the

provisions of this section shall result in the immediate termination of this Work Authorization by the City.

SECTION 19
SEVERABILITY

If any provision of this Work Authorization or the application thereof to any person or situation shall to any extent, be held invalid or unenforceable, the remainder of this Work Authorization, and the application of such provisions to persons or situations other than those as to which it shall have been held invalid or unenforceable shall not be affected thereby, and shall continue in full force and effect, and be enforced to the fullest extent permitted by law.

SECTION 20
SURVIVAL

All representations and other relevant provisions herein shall survive and thereby continue in full force and effect, upon termination of this Work Authorization.

SECTION 21
JOINT PREPARATION

The parties hereto acknowledge that they have sought and received whatever competent advice and counsel as was necessary for them to form a full and complete understanding of all rights and obligations herein, including the Continuing Contract, and that the preparation of this Work Authorization has been a joint effort of the parties, the language has been agreed to by parties to express their mutual intent and the resulting document shall not, solely as a matter of judicial construction, be construed more severely against one of the parties than the other.

[THIS SPACE LEFT INTENTIONALLY BLANK]

WORK AUTHORIZATION BETWEEN THE CITY OF DEERFIELD BEACH AND APTIM ENVIRONMENTAL & INFRASTRUCTURE, LLC FOR PROFESSIONAL ENGINEERING SERVICES

IN WITNESS WHEREOF, the parties hereto have made and executed this Work Authorization on the respective dates under each signature.

CITY

CITY OF DEERFIELD BEACH, a municipal corporation of the State of Florida

ATTEST:

By:_____
David Santucci, City Manager

_____
Heather Montemayor, City Clerk

This ___day of _____, 2023.

Approved as to form and legal sufficiency for the use of and reliance by the City of Deerfield Beach only:

_____
Anthony C. Soroka, City Attorney

CONSULTANT

By:_____
Signature
Name: _____
Title: _____

This ___day of _____, 2023.

EXHIBIT “A’
SCOPE OF SERVICES

August 25, 2023

Aptim Environmental & Infrastructure, LLC
6401 Congress Avenue, Suite 140
Boca Raton, FL 33487
(561) 391-8102

Hillary Silverstone
Sustainability Coordinator
City of Deerfield Beach
401 SW 4th Street
Deerfield Beach, FL 33441

Subject: **City of Deerfield Beach – Municipal Greenhouse Gas Inventory and Sustainability Roadmap Project**

Dear Ms. Silverstone:

Aptim Environmental & Infrastructure, LLC (APTIM) is pleased to provide you with a proposed scope of work for the **City of Deerfield Beach Municipal Greenhouse Gas Inventory and Sustainability Roadmap Project**. APTIM stands ready to complete this project on budget, on time and with the enthusiasm necessary to exceed your expectations.

Having the pleasure of working within Broward County for many years, I know the City of Deerfield Beach's advantage and greatest asset is its dedicated staff. Please let us augment your capacity by bringing the best technical resources in the nation, most efficient analytical methods and the vision for a sustainability roadmap that can be easily implemented, tracked and evolved over time. ***Our intent for the sustainability roadmap is to support the City by aligning with the objectives of elected officials, internal departments, residents and regional partners to draw the most positive attention to the City, raise awareness to increase participation in initiatives and streamline accessibility of funding to continue programs.***

Our approach proposes to utilize the data collection phase, training and workshops as opportunities to increase awareness and engagement amongst staff and the public and identify and empower sustainability champions to support implementation of the plan. We will leverage the APTIM team's first-hand experience in developing multiple Broward County Communitywide and Government Operations greenhouse inventories, the Southeast Florida Regional Climate Change Compact's regional emissions inventory and municipal net zero and climate action plans within Broward to complete the municipal inventory efficiently and thoroughly for city facilities and operations. Concurrently, we offer our sustainability connections to position the City of Deerfield Beach staff in peer networks and on new paths for funding and resources. This step was found to be most critical for ownership and implementation of a sustainability roadmap

by representatives in each of the City's departments. Connecting peers across networks and speaking the language of the different departments incentivizes participation in training. ***Most importantly, APTIM will identify and follow an efficient path from the inventory to the sustainability roadmap to reduce emissions and mitigate risks. We will deliver a plan of substance and avoid identifying strategies that are not feasible, practical or have low return on investment for the City.***

The project will be managed closely from our Boca Raton office with continuous on-demand input from APTIM subject matter experts. The team proposed for this project offers expertise in sustainability, energy, waste, equity, emissions mitigation, engineering, resilience hubs, innovative technology, hazard risk assessment, planning, capital programs, regulation and policy and funding and financing. Members of the team hold various certifications in LEED, facilitation and project management, all of which will be useful for this project. ***As project manager, I commit to being available for Deerfield project staff on-call and readily available for in-person or virtual meetings to ensure delivery of an exceptional project.***

By the numbers, APTIM has helped our clients save more than $7 billion in energy costs and managed over $30 billion in state and federal grant funds awarded to communities to recover, mitigate, and adapt to flooding, severe storms, and fires. APTIM has completed greenhouse gas inventories and reporting for over 12,000 facilities. APTIM has recently completed 11 vulnerability assessments and 13 resilience action plans for local governments, states and utilities. Honoring its commitment to Environmental, Social and Governance principles and United Nations' Sustainable Development Goals, APTIM remains committed setting ambitious goals and tracking performance for 12 specific objectives through internal planning and scoring, annual reporting to the Carbon Disclosure Project and expanding investment in diversity, equity and inclusion and sustainability initiatives.

We appreciate your consideration of our team and our proposal; our extensive experience and commitment to the betterment of our communities make us the ideal partner for your significant project. APTIM submits this subject to mutually acceptable terms and conditions. Please feel free to contact us with any questions.

Kind Regards,

Samantha Danchuk, Ph.D, PE
Climate and Coastal Resilience Lead
Aptim Environmental & Infrastructure, LLC
Samantha.danchuk@aptim.com
561.361.3199

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Firm Overview and Experience

Expect the Extraordinary

APTIM is a leader in providing environmental, sustainability and resilience services to federal, state, and local government customers, and the private sector. Whether it is safeguarding and maintaining critical infrastructure, decarbonizing utility programs, or helping clients design and implement meaningful environmental, social and governance (ESG) initiatives, APTIM strives to deliver new, innovative, and adaptive solutions for our customers each day. Our goal is to assist clients in being responsible stewards of their resources and empowering them to realize meaningful environmental impacts, all while helping them meet their organizational goals and objectives.

Our sustainability solutions have focused on many areas, including:

Strategy Planning & Development

- ✓ Sustainability Action Planning
- ✓ Climate Action Planning
- ✓ Sustainability Reporting
- ✓ Resilience Planning
- ✓ ESG Questionnaire & Ratings Support
- ✓ Facility and Transportation Emissions Reduction Strategies

Policy Assessment & Formulation

- ✓ Environmental Justice Risk Assessment
- ✓ ESG Policy Development
- ✓ Grant & Incentive Management

Performance Evaluation

- ✓ Sustainability Assessments
- ✓ Waste Characterization, Minimization & Diversion
- ✓ Energy Efficiency
- ✓ GHG Emissions Accounting & Reporting

Climate Change Mitigation & Greenhouse Gas (GHG) Emissions Management

APTIM has assisted several organizations in understanding the primary operations that contribute to climate change, inventoried scope 1, 2, and 3 emissions according to regulatory and voluntary compliance, developed strategies to reduce the largest sources of emissions, and supported implementation of GHG mitigation efforts. The deliverables and outcomes of these services enabled our clients to create or update their annual environmental, social, and governance (ESG) reports, participate in reporting to voluntary third-party frameworks such as CDP (i.e., formerly Carbon Disclosure Project), and align with voluntary third-party certification standards such as LEED, TRUE Zero Waste, ParkSmart, and Airport Carbon Accreditation.

For over 10 years', APTIM has completed GHG inventories and CDP reporting for over 12,000 facilities. These facilities include:

- ✓ Publix Supermarkets (ongoing): Approximately 2,000 facilities
- ✓ Confidential Nationwide Home Improvement Specialty Retailer (2008- 2018): Approximately 2,000 facilities
- ✓ Family Dollar (2011 – 2014): Approximately 8,000 facilities
- ✓ Confidential Nationwide Pharmacy/Retailer (2011-2014): Approximately 8,500 facilities

Sustainability Roadmaps and Climate Action Plans

By clearly understanding the specific needs of our clients, APTIM can provide the most effective solutions to support each with their sustainability goals. Our SMEs are skilled at implementing a range of solutions across varied community demographics. Projects include management and coordination of utility programs for energy efficiency and conservation, climate mitigation plans, resilience plans, greenhouse gas inventory efforts, and waste minimization programs.

Our efforts also include creating **sustainability roadmaps** which integrate fragmented sustainability goals and efforts into the core strategy of an organization, garnering executive support, embedding the sustainability priorities into day-to-day operations, and fostering an organizational culture where employees are not only responsible, but excited to contribute to sustainability efforts. As example of APTIM's strength in implementing roadmaps, APTIM assisted the New York City Transit Authority (NYCTA) in achieving Leadership in Energy and Environmental Design (LEED) Gold certification for its Mother Clara Hale Bus Depot, the first bus depot to be certified. The bus depot is home to 150 hybrid buses, which are 30% more efficient than conventionally fueled buses.

APTIM developed Sustainability Roadmaps for 13 Ohio cities between 2014 and 2020 as part of AEP Ohio's Community Energy Savers Program:

City of Toronto, City of North Canton, New Albany, Worthington, Amesville, Athens County, Discovery District in Columbus, Lima, Louisville, New Philadelphia, Rio Grande, Somerset, and Wooster.

APTIM recently completed updating the Town of Longboat Key's existing Vulnerability Assessment, pursuant to Section 380.093, Florida Statutes (F.S.) and developing a **Sea Level Rise and Reoccurring Flooding Resilience Adaptation Plan**. The overarching objective of this effort was to support capital program planning in the next 5, 10 and 20 years and develop a resilience plan with priority projects for the Town. Critical assets including infrastructure risk by sector were assessed based on the likelihood of occurrence of flooding and the potential flood depths. A list of challenges by neighborhood was generated and recommendations for adaptation measures were made for Town assets and regional infrastructure as well as individual neighborhoods. The availability of this information allows for adaptive planning and policy that responds to changes in conditions. To further support implementation, our team provided the Town with a schedule of resilience projects, preliminary costs and potential funding sources and a reminder of the return on investment anticipated for proactive investment in the community.

Name & Location	Project Description	Relevance to Scope
ESG Goal Setting and Sustainability Report Chicago Department of Aviation *Chicago, IL*	✓ Assisted two major airports in setting sustainability goals, reporting on ESG metrics, energy management, water and waste benchmarking, LEED certification assistance, and EV strategy. ✓ Inventoried GHG emissions to determine eligibility for Level Airport Carbon Accreditation.	✓ Developing ESG goals incorporating multiple priorities and underpinning reporting metrics. ✓ Analyzing GHG emissions and energy use to identify mitigation goals. ✓ Reduced GHG emissions and carbon footprint through energy, water, and waste efficiency projects.
Energy Efficiency & Sustainability Roadmaps AEP Ohio Community Energy Savers (CES) Program *Various Cities, OH*	✓ Utility-community partnership program. ✓ Empowered communities to reach energy efficiency savings goals. ✓ Developed three-year Energy Efficiency and Sustainability Roadmaps for 13 communities.	✓ Partnered with local government and community stakeholders. ✓ Authored community Sustainability Roadmaps. ✓ Built climate resilience at the local level and incorporated community stakeholders into framework. ✓ Followed city government operations, including regulatory frameworks/ policies that support climate adaptation.
Voluntary GHG inventory programs for 12,000 commercial client facilities	✓ Performing GHG inventories more than 10 years. ✓ Clients include Publix Supermarkets; Family Dollar; and other confidential nationwide retailers.	✓ Created GHG inventories for several facility types including manufacturing, distribution centers, and retail stores. ✓ Benchmarked against industry peers and created strategies to reduce GHG emissions. ✓ Worked with sustainability teams to improve ESG rankings.
US Cities & Airports	✓ Completed GHG Inventories and Assessments.	✓ Partnered with local government and community stakeholders. ✓ Created community wide GHG inventories. ✓ Developed recommendations and directions for compliance with the USEPA's MRR.
Regional Landfills	✓ EPA GHGRP GHG Reporting.	✓ Carbon footprint analysis. ✓ Annual GHG emissions reporting. ✓ Environmental compliance evaluation and reporting criteria pollutants and GHG emissions. ✓ Permitting and compliance reporting and feasibility studies considering conventional and conversion technology waste management solutions.

Prioritizing Sustainability at APTIM

In addition to assisting clients in their sustainability journey, APTIM takes pride in continuously improving our own journey. Our mission is to accelerate the transition towards a clean and efficient energy economy, build a sustainable future for our communities and natural world, and create an inclusive and equitable environment that celebrates the diversity of our teammates. Sustainability is at the core of our company and commitment to our stakeholders, and we are driven by transparency, action, cooperation, and progress.

In line with these values, we are proud of our commitment to set Science Based Targets (SBT), our participation in completing Carbon Disclosure Project's (CDP) climate change questionnaire, joining the United Nations Global Compact (UNGC), and alignment of our environmental, social, and governance (ESG) efforts to the United Nations Sustainable Development Goals (SDGs) and Global Reporting Initiative's (GRI) universal standards. APTIM has recently produced an **Internal Corporation ESG Reporting and GHG Inventory**. If you would like to learn more about APTIM's ESG commitments and progress, we encourage you to explore our CY 2022 ESG Report.

Building Partnerships and Leadership through Engagement

APTIM has served as the administrator for the statewide Focus on Energy Program in Wisconsin for 11 years. This program is specifically targeted for suburban communities and includes an equity focused initiative and a small business initiative. APTIM's role has been to set goals with the client and identify strategies for implementation, to operationalize the plan, to coordinate with subject matter experts, and to manage relationships across 20 communities including governments, businesses, and residents as stakeholders. APTIM has found the key strategies for working within the community is to leverage existing relationships with trusted agencies and entities, to incentivize participation through offering relevant financial benefits and to empower the local workforce as partners in the implementation of program goals. APTIM successfully identified the influencers in each community and leveraged their infrastructure within the community to achieve the goal of positively impacting as many people as possible as quickly as possible. APTIM has repeated this process for different sustainability and resilience needs in Louisiana, New York and Florida. Building partnerships through continued engagement and consensus building throughout projects consistently generates program ambassadors or champions that become essential for implementing plans and roadmaps.

Key Personnel and Resumes

We have assembled a core team of key personnel that will be involved in developing the Greenhouse Gas Inventory and Sustainability Roadmap Project from start to finish. Within this section you will find a summary of personnel experiences and proposed project roles and responsibilities. This team will have access to a variety of subject matter experts that will support them and the efforts of this endeavor. The organization chart presented in **Figure 1** illustrates the proposed team for this project.

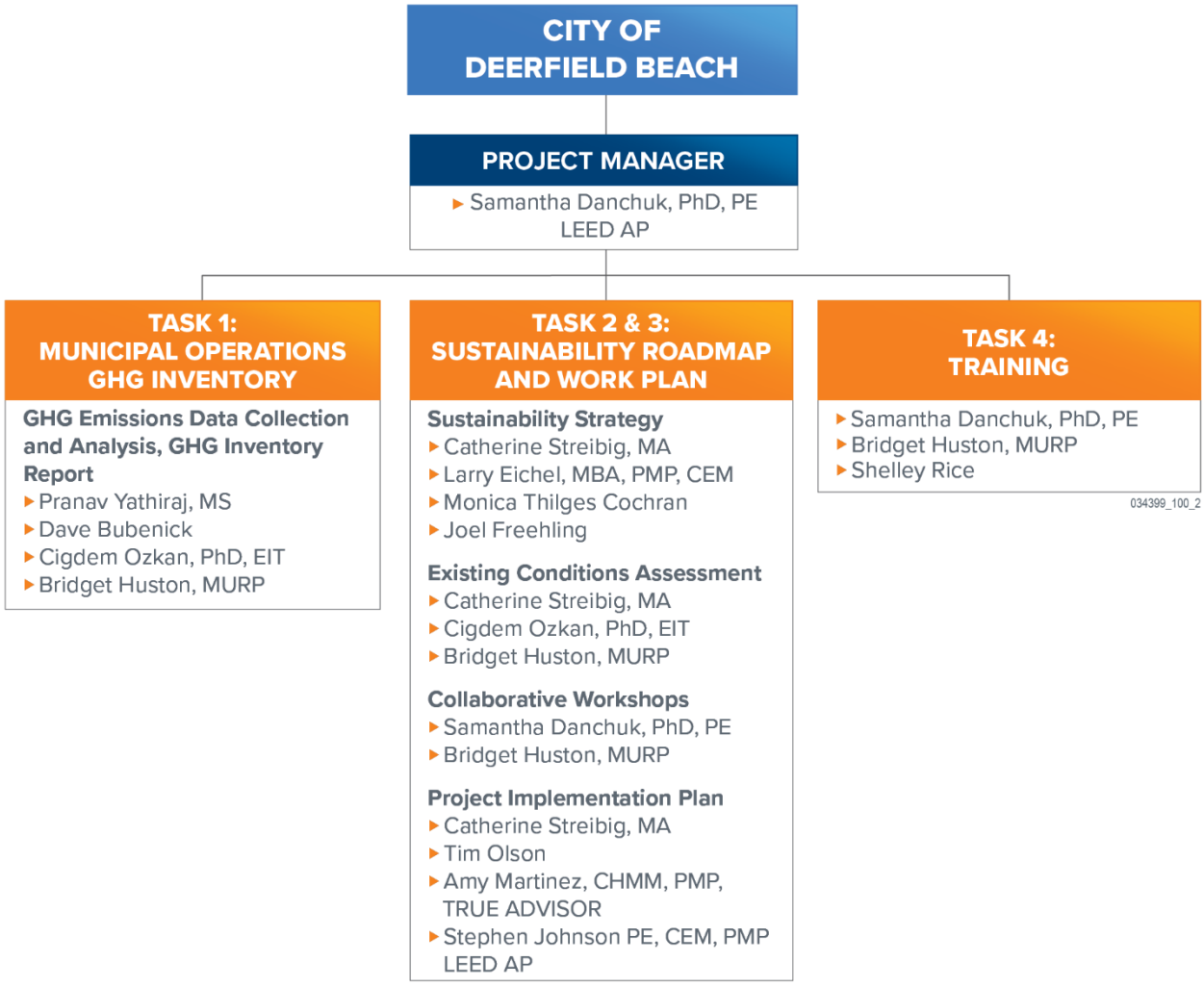


***Figure 1** Organization Table*

SAMANTHA DANCHUK, PHD, PE

PROJECT MANAGER | **APTIM**

Professional Summary

Dr. Samantha Danchuk, PE, is the Program Manager for APTIM's Florida Resiliency Program. Dr. Danchuk has extensive experience in stakeholder outreach for the purposes of gaining consensus on proposed policies, identifying goals and objectives, collecting data, leading public forums, focus groups and interviewing individuals. Dr. Danchuk also has a strong reputation as a trusted source amongst regional and national climate adaptation networks and credited as the technical lead for nationally recognized policy and project case studies. In her former role, she delivered nearly 100 presentations per year, led multiple task forces and committees simultaneously and facilitated consensus on regional scientific deliverables.

Relevant Experience

Project Manager, AARFRC Atlantic Council–Miami Dade County Resiliency Hub and Vulnerability Assessment

Project Manager for countywide risk assessment of electrical infrastructure and social vulnerabilities to support siting of resilience hub prototypes. Developed new methodology for weighting energy burden, local system reliability and infrastructure risk by census tract. Developed criteria and questions for stakeholder outreach and interviewed residents.

Project Manager, South Florida Military Installation Resilience Review (MIRR) Vulnerability Assessment

Project Manager for environmental, socioeconomic, and future conditions vulnerability assessment of the ability of the military to carry out its missions on Homestead Air Force Reserve Base, SOUTHCOM, Naval Surface Warfare Center and Naval Air Station Key West that could be mitigated through community investments and solutions. Interviewed focus groups of data owners including utilities, local governments, and infrastructure owners to identify vulnerabilities. Supported organization and presentations for workshops to identify critical missions, project objectives and potential projects.

Education

- PhD Civil Engineering, Louisiana State University
- MS Environmental Engineering, University of California, Berkeley
- BS Environmental and Civil Engineering, Florida State University

Professional License or Certification

- Professional Engineer, Civil, Florida, 73868
- LEED-Green Associate

Skills & Experience

- Project Management
- Vulnerability/Risk Assessment
- Community Engagement

Years w/APTIM

✓ 2

17

YEARS EXPERIENCE

Project Manager, Longboat Key Sea Level Rise Vulnerability Assessment Adaptation Plan

Resilience engineer responsible for coastal hazard vulnerability assessment, risk mapping, resilient capital improvement plan and community adaptation strategy. Presented to elected officials and stakeholders and integrated public feedback in deliverables.

Resilience Engineer, Captiva Island Flood Risk Vulnerability Assessment Adaptation Plan

Resilience engineer responsible for coastal hazard vulnerability assessment, risk mapping using GIS, resilient capital improvement plan and community adaptation strategy. Supported presentations to elected officials and special committee on sea level rise. Developed materials for public education on risk and coastal processes.

Resilience Expert, Rebuild by Design US Atlas of Disasters

Data analytics of climate impacts and federal disaster funding by county and state paired with maps of rated return on investment for resilience investments, energy reliability, social vulnerability and estimation of future damage costs. Supported development of website content, presentations and visuals to deliver unique analysis of national datasets. Engaged with media outlets, federal agencies and project developers to explain results.

Broward County Resilient Environment Department, Broward County Assistant Chief Resilience Officer, Resilience Capital Program Administrator, AD for EPCRD*

Project Manager, Broward County Communitywide County Action Plans*

Project manager, co-developer and Climate Change Task Force staff liaison. Plans were developed based on Scope 1-3 Greenhouse Gas Emissions Inventories, risk assessments for heat and flooding, Community Energy Strategic Plans, Renewable Energy Action Plans and Heat Mitigation Strategy. Facilitated dozens of workshops for public outreach, delivered training program for employees, staffed task forces, delivered polls and interactive and youth focused engagement throughout project. Supported facilitation and delivery of 12 regional implementation workshops for the South Florida Regional Climate Change Compact. Developed YouTube series and high school curriculum for eLearning of resilience topics.

Broward County Land Use Policy for Future Conditions and Sea Level Rise*

Co-developer of policies for minimum tidal flood barrier/ seawall elevation, future groundwater table drainage design elevation, penny transportation projects surtax resilience criteria, adaptation action areas of regional significance and land use resilience criteria for densified redevelopment. Series of workshops were facilitated to gain consensus for policies. Numerous presentations to Broward County Commission and Planning Council for policy approval.

**Projects and roles completed prior to joining APTIM*

PRANAV YATHIRAJ, MA

GHG EMISSIONS DATA COLLECTION & ANALYSIS, GHG INVENTORY REPORT | **APTIM**

Professional Experience

Mr. Pranav Yathiraj is an Environmental Science Intern at APTIM. He is a master's candidate in Environmental Engineering at Georgia Institute of Technology in Atlanta. He has worked on wastewater sampling and bio evaluation projects. He has experience in bioreactor development, and has done literature reviews, reactor designs, 3D modeling, prototype development, and prototype evaluations. Mr. Yathiraj has performed life cycle and cost assessments to benefit ratio analysis, and economic impact assessments. He has been a part of sustainability surveys and audits and has knowledge of the United Nations Sustainability Development Goals (UNSDG). He has also been involved in various projects that have honed his marketing and business development skills and is proficient in Adobe Creative Cloud, Solidworks, AutoCAD, BioWIN, R programming, Microsoft Office Tools, and SimaPro.

Relevant Experience

- Worked on company-wide greenhouse gas (GHG) emission tracking efforts to calculate Scope 1 and 2 GHG emissions of APTIM.
- Led Scope 3 GHG emission calculations for APTIM across the company's value chain.
- Acts as subject matter expert for carbon and energy for the Sports Sustainability Index (SSI) survey owned by APTIM.
- Created and maintained KPI dashboard on PowerBI for CVS/Inmar communicating different metrics tracking performance and trends.

Education

- MS, Environmental Engineering, Georgia Institute of Technology, Atlanta, Georgia, 2022
- Bachelor of Technology, Biotechnology Engineering, Dayananda Sagar College of Engineering, Bangalore, India, 2020

Professional License or Certification

- International Society of Sustainability Professionals, Student Member, 2022
- Association of Environmental Engineers and Scientists, Student Member, 2021

Skills & Experience

- Performed on APTIM's company-wide GHG emission tracking
- Serves as subject matter expert for carbon and energy for APTIM's Sports Sustainability Index (SSI) survey
- ESG Risks & Opportunities, Course, 2022

Years w/APTIM

✓ < 1

2

YEARS EXPERIENCE

Graduate Technical Researcher, Engineers Without Borders- Georgia Tech/Wish4Wash LLC, Bioreactor Team, Atlanta, GA, 2021-2022*

- Managed the development of a prototype small scale UAS Bioreactor that can be used in off grid sanitation systems in areas without access to proper water treatment system.
- Designed the prototype using SolidWorks and BioWIN, fabricated and performed evaluations on the prototype.
- Created marketing material used in fund requests and raised $1,000+.

Living Building Equity Champion, Georgia Institute of Technology, Kendeda Building, Atlanta, GA, 2021-2022*

- Developed curriculum about UNSDG to be incorporated in the Capstone curriculum of the College of Computing, Georgia Tech.
- Conducted social surveys to aid in equity and diversity inclusion programs a Georgia Tech.
- Mentored undergraduate students belonging to the Impact LLC program at Georgia Tech in UNSDG and sustainability.

Project Lead, Georgia Institute of Technology, Sustainable Engineering, Atlanta, GA, August 2021-December 2021*

- Performed cradle to grave life cycle assessment to compare the water systems of the Kendeda (Living) Building against a conventional building using SimaPro and performed a cost to benefit analysis to aid in economic impact assessment.
- Conducted surveys and literature review to obtain the data and information about water systems of the city of Atlanta required to conduct the LCA.

**Projects and roles completed prior to joining APTIM*

DAVID BUBENICK

GHG EMISSIONS DATA COLLECTION & ANALYSIS, GHG INVENTORY REPORT | **APTIM**

Professional Experience

Mr. David Bubenick is Senior Project Manager and Director of APTIM's Carbon Management Practice and Lead Air Quality consultant for solid waste programs. He serves as an institutional resource for climate change regulation, and for greenhouse gas (GHG) emissions compliance and reporting for the company's commercial client base. He is the regulatory liaison with EPA on climate change matters, and main point of contact with The Climate Registry, the Carbon Disclosure Project and Verdantix market analysis projects. Mr. Bubenick is responsible for technical evaluations and management of over 50 GHG inventories, EPA regulatory and CDP investor reporting programs for APTIM's clients. His project teams have performed GHG inventories for thousands of client facilities over the past few years.

As a Senior Consultant and engineering business executive, Mr. Bubenick has over 30 years' experience in management consulting, environmental program development and management, facility operations management and air/waste technology assessment. He has been responsible for managing, developing, and supporting air, solid waste and energy projects nationally, involving industrial processes, including cement manufacturing, mining operations, and oil and gas projects; conventional and solid waste fuel combustion; waste management technologies/strategies; emission credit trading; and operations/security risk management.

Mr. Bubenick co-developed and served as Senior Vice President of a nationally-recognized emissions brokerage and consulting business—The AirBank, financially sponsored by an APTIM legacy company. As an experienced air emissions broker and portfolio manager, his expertise

Education

- MS, University of Illinois, Environmental/Civil Engineering
- BS, Civil Engineering, Rutgers University, New Brunswick, NJ
- BA, Economics, Rutgers University, New Brunswick, NJ

Skills & Experience

- ✓ Project Management
- ✓ GHG inventories for several thousand clients
- ✓ Liaisons with EPA on climate change issues

Years w/APTIM

- ✓ 20

30

YEARS EXPERIENCE

includes credit certification and verification audits, control strategy and compliance assessments, credit market forecasting and regulatory liaison. Mr. Bubenick managed one of the largest portfolios ever marketed in the US resulting in the successful transaction of 1,200 tons of NOx and other criteria pollutant offsets for Consolidated Edison of New York.

Among his credentials in air consulting, Mr. Bubenick led a team that published the first comprehensive life cycle analysis of acidic deposition (SO2 and NOx) in North America for the US DOE. He also convened and hosted the first US EPA Greenhouse Gas Emissions Reduction Options conference.

Mr. Bubenick has prepared over one hundred reports covering pollution control technology, emissions trading, air quality policy and economics, energy efficiency and environmental compliance. He has authored dozens of internationally recognized publications, in particular: *the Acid Rain Information Book* (1st and 2nd editions); contributing author to the *Handbook of Air Pollution Technology*; and editor/author of a 12-volume compendium of waste management alternative guidance documents for the US DOE/NREL.

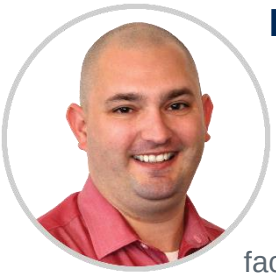
Relevant Experience

Project Manager, Solid Waste Management Feasibility Study – Carbon Financing, Yalta, Ukraine (US Trade and Development Agency)

Mr. Bubenick is Project Manager for a feasibility study of thermo-conversion, bioconversion, and mechanical separation options – combustion technologies evaluated included waste-to-energy (WTE) mass burn, RDF, circulating FBC, pyrolysis and gasification. All options were qualitatively and quantitatively evaluated based on capital cost, operating and maintenance costs and amortization, revenue potential, reliability, direct benefits, indirect benefits, GHG emission reduction creation potential, environmental impact, local community acceptance, political issues, community financial resources, materials recovery potential and compatibility with European Union regulations. A project financing *pro forma* was prepared based on market value of carbon emission reductions envisioned from the installation of a WTE plant. This formed a key part of the project funding plan, through placement of the ERUs either to national carbon funds such as the Dutch Senter-Novem, the Danish Carbon Fund or Prototype Carbon Fund (of the World Bank) or similar multilateral bank funds.

LARRY EICHEL, MBA, PMP, CEM

SUSTAINABILITY STRATEGY | **APTIM**



Professional Summary

Mr. Larry Eichel serves as APTIM's Director of Sustainability. His experience includes thirteen years in facilities, construction, project, program, and portfolio management, strategic planning, energy and water efficiency, waste reduction and diversion, energy and life cycle modeling, green building and product certification management, incentive and rebate management, GHG accounting and reporting, climate action planning, climate change mitigation, and corporate sustainability responsibility (CSR) and ESG reporting. He develops leading edge strategic plans, business models, frameworks, methodologies, and processes that maximize stakeholder value and transforms sustainability and climate commitments into functional actions that provide organizations sustainable competitive advantage. He guides clients in setting objectives and strategic initiatives that are measurable, attainable, and credible producing optimized solutions.

Relevant Experience

Rocket Mortgage Fieldhouse Sustainability Sport Index Assessment, Cleveland, OH

- Examined construction documents and utility bills for the facility prior to physically visiting the site to understand the mechanical, electrical, plumbing, and automation equipment, operating schedules, and maintenance records to identify any outliers.
- Walked entire site with facilities personnel, observed trends and processes, and interviewed relevant stakeholders to determine energy and water

Education

- MBA, Entrepreneurship, California State University, Los Angeles
- MA, Global Sustainability, University of South Florida
- BS, Biology, University of South Florida, St. Petersburg

Professional License or Certification

- TRUE Zero Waste Advisor Certificate Program (GBCI)
- Project Management Professional, 2241770
- Certificate Program, Diversity, Equity, and Inclusion (DEI) in the Workplace Certificate
- Climate Change Professional (CC-P), Association of Climate Change Officers (ACCO)

Skills & Experience

- ✓ Sustainability
- ✓ Energy and Water Efficiency
- ✓ Climate Action Planning

Years w/APTIM

- ✓ 1

13

YEARS EXPERIENCE

consumption and waste generation patterns and outline opportunities for improvement.

- Recorded all observed processes, procedures, and operating conditions and generated a comprehensive report that compared energy, water, and waste data to similar facilities and provided recommendations for improvement to reduce energy, water, and waste costs.

Quality Built, Environment & Sustainability, Director of Sustainability Programs, San Diego, CA, 2020–2022*

- Directed a team of seven managers responsible for sustainability strategic planning, life cycle assessments, energy, and water auditing, GHG and carbon accounting, ESG and corporate sustainability reporting, energy modeling, and project administration.
- Improved ESG risk ratings of top 10 homebuilders by 15% while reducing project costs by 20% through tax credits, utility rebates, expedited permitting and plan review, third-party inspections and verifications, and other federal, state, and local incentive programs.
- Increased operations revenue by 40% year-over-year through new service offerings such as ENERGY STAR, WaterSense, Indoor airPLUS, Renewable Energy Ready, Zero Energy Ready, LEED, Living Building Challenge Core, and GreenPoint Rated certifications.

Underwriters Laboratories (UL), Environment & Sustainability, Senior Sustainability Project Manager, Irvine, CA, 2019–2020*

- Supervised four project managers responsible for $5M in contract value across sustainability report preparation (GRI, SASB, IR), ESG reporting (GRESB, CDP), green building certification (LEED, BREEAM), and wellness certification (WELL, Fitwel) business units.
- Managed 40 sustainability projects representing $9M in contract value for Fortune 500 clients across the healthcare, technology, finance, retail, and entertainment as well as $7M for government clients across military, infrastructure, and education industries.
- Created $1.5B in additional market value for public and private clients by enhancing sustainability disclosures which improved ESG scores with data aggregators and providers such as MSCI, Sustainalytics, Refinitiv, CDP, S&P Global, Bloomberg, and FTSE Russell.

DryWired, Environment & Sustainability, Director of Sustainability, Los Angeles, CA, 2018–2019*

- Mentored six managers that delivered sustainable projects which earned tradable carbon credits and offsets recognized by the greenhouse gas registries: American Carbon Registry, The Climate Registry, Climate Action Reserve, and Verified Carbon Standard.
- Aided clients in deriving 15% of their revenue through the sale of carbon credits and offsets on commodity exchange platforms like Carbon Trade eXchange and Xpansiv CBL while earning LEED Zero and ILFI Zero Carbon certifications on prime real estate holdings.

**Projects and roles completed prior to joining APTIM*

CATHERINE STREIBIG, MA

SUSTAINABILITY STRATEGY, EXISTING CONDITIONS ASSESSMENT, PROJECT IMPLEMENTATION PLAN | **APTIM**

Professional Summary

Ms. Streibig has twelve years of experience focused on creating more sustainable, resilient communities in Illinois and beyond. In her five years at APTIM, she has worked to engage communities and residents in community led Sustainability Plans and the planning of a Resilience Hub. She currently also supports a California utility collaborative focused on emerging technology in California and sharing the learnings of their research.

Relevant Experience

Consultant, California Demand Response Emerging Technology Collaborative

Provide project management support for a CA utility to help manage the rollout of a complicated transactive energy demand response emerging tech pilot. Ongoing support managing their emerging technology website, the development of research briefs, tracking relevant policies and dockets, and overseeing outreach for the collaborative.

Deputy Project Manager, Community Energy Savers, AEP Ohio, OH

Served as the Deputy Project Manager for the AEP Ohio Community Energy Savers program. Working with AEP Ohio and Columbia Gas of Ohio to promote energy efficiency programs, through a community-based incentive, across the AEP Ohio territory. This included the creation of Sustainability Roadmaps for the communities and the creation of the Linden Resilience Hub Pilot Guidelines for the City of Columbus, as awards for program participation.

Education

- MA, Biology, Miami University, Oxford, Ohio, 2015, focus on Community Sustainability
- Bachelor of Arts, Political Science, Minor: Anthropology, Miami University, 2011
- Bachelor of Arts, Environmental Science: Principles and Practices, Miami University, 2011

Skills & Experience

- ✓ Focus on creating more sustainable, resilient communities
- ✓ Stakeholder engagement, community sustainability and project management

Years w/APTIM

✓ 5

12

YEARS EXPERIENCE

Consultant, State-Wide Program

Developed an Administrator Operations Procedures Guide for Focus on Energy in Wisconsin. Providing operations assistance with large-user incentive approvals, marketing reviews, and operations materials.

Planner, FEMA COVID-19 Vaccination Distribution Analysis Project

Special project providing research to populate new FEMA database and identifying distribution pain points to support 100m vaccines in 100-day goal.

Sustainable Development Policy Officer, Royal Society for the Protection of Birds, RSPB, Cambridge, UK, 2016-2017*

Balanced nature conservation policy issues and the need for new energy, transport, and housing. As part of these efforts, led government consultations advocating renewable energy and green infrastructure spatial planning. To educate other regions, organized a roadshow covering adaptation, mitigation, and natural capital. Supported regional offices during government devolution by tracking and consulting on emerging strategic plans.

Senior Program Associate, Midwest Energy Efficiency Alliance, MEEA, Chicago, IL (2014 – 2016) / Program Associate (2012 - 2014)*

Program Management and Delivery, Illinois Department of Commerce and Economic Opportunity*

Managed the Savings through Efficient Products (STEP) program, built to provide savings in hard-to-reach public facilities, which exceeded program energy savings goals annually. Nurtured STEP from a 75-facility market transformation pilot program to a portfolio program with over 600 facilities participating from across the state. Over three years, participants installed 10,000 measures with estimated annual savings of $7.5 million. Managed all daily activities including logistics, staff oversight, outreach, reporting and evaluation. Selected as a speaker on engaging hard-to-reach audiences in 2015 for AESP and ACEEE conferences.

Researcher, MEEA Programs Team, Chicago*

Co-authored the Midwestern Technical Resource Manual Inventory report aimed at understanding the use of Technical Resource Manuals (TRM), or equivalent tools, in the Midwest.

Program Associate, Lights for Learning, Illinois Department of Commerce and Economic Opportunity*

Administered an energy efficiency education program (market transformation portfolio), serving 20,000 students annually, which used group education reinforced through the sale of energy-saving products.

**Projects and roles prior to joining APTIM.*

BRIDGET HUSTON, MURP

GHG EMISSIONS DATA COLLECTION & ANALYSIS, GHG INVENTORY REPORT, TRAINING | **APTIM**

Professional Summary

Ms. Bridget Huston is an experienced resilience planner and project assistant with experience in vulnerability assessments, applying visualization and climate scenario tools for project evaluation, plan development, report writing, qualitative and quantitative data collection and analysis, community outreach, and surveying, and programming.

Relevant Experience

Sea Level Vulnerability Assessment, Captiva Island, FL

Managed client communications and generated workshop materials summarizing the process of collecting, analyzing, and interpreting data for vulnerability assessment and conceptualizing adaptation strategies. Generated graphics and communication materials.

Sea Level Rise and Recurring Storms Vulnerability Assessment, Longboat Key, FL

QA/QC, data synthetization, and technical reporting. Assisted with interpretation of data and conceptualization of innovative adaptation strategies and infrastructure investments.

South Florida Military Installation Resilience Review

Collected data for four local military installations via continuous outreach and research. Assisted with analyzing, interpreting, and summarizing results from exposure, sensitivity, adaptive capacity, and risk analyses and with writing of various technical memos. Assisted with the preparation of content, graphics, and narration for Study Advisory Committee and Working Group workshops.

Miami-Dade Countywide Resilient Hub Network Strategy

Creation of Energy Reliability Vulnerability Assessment and Evaluation. Collected data related to energy sector and infrastructure, energy reliability, energy use, demographics, etc. agencies and project developers to explain results.

Education

- MS, Urban and Regional Planning, Florida Atlantic University
- MS, Environmental Science, Florida Atlantic University
- BS, Biology, University of Florida

Skills & Experience

- ✓ Vulnerability Assessments
- ✓ Technical Writing
- ✓ Spatial Analyses via GIS
- ✓ Data Collection and Analysis
- ✓ Community Outreach

Years w/APTIM

✓ 1

7

YEARS EXPERIENCE

APTIM | 034399

South Florida Regional Planning Council, Environmental and Community Resilience Planner, July 2021-June 2022*

Assisted in the development of state and federal funding proposals to support resilience investments. Applied technical information and tools in the review of projects for resilience considerations and prepare formal comment and pursued partnerships with local, state, and federal agencies. Provided support in the organization of task force meetings, roundtable, summits, and workshops, and represented the Council in public forums and agency meetings. agencies and project developers to explain results.

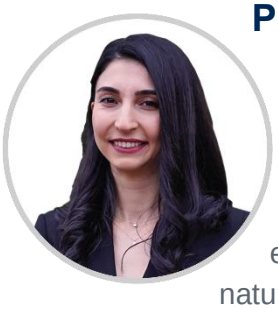
Project Assistant, City of Wilton Manors, March 2021-August 2022*

Worked on a city-wide sea level rise vulnerability assessment for Wilton Manors, FL to better inform city planning strategies, budgeting, and capital improvement project adaptation and mitigation for years 2040, 2050, 2060, and 2070. Collaborated with various stakeholders and experts on sea level rise, resilience, and planning, in Broward County, FL to discuss and align on current policy, initiatives, and federal, state and local resiliency goals. Planned and coordinated outreach events to encourage resident involvement and to obtain community members testimonies regarding their experiences with flooding.

**Projects and roles completed prior to joining APTIM*

CIGDEM OZKAN, PHD, EI

GHG EMISSIONS DATA COLLECTION & ANALYSIS, GHG INVENTORY REPORT | **APTIM**



Professional Summary

Dr. Cigdem Ozkan has eight years of experience investigating innovative solutions to resiliency problems and energy demands through an environmentalist approach. She integrates nature-based solutions with engineered infrastructures to resolve complex environmental challenges.

Relevant Experience

South Florida Military Installation Resilience Review

Contributed to final phase via mission critical data set refinement, data analysis & visualization. Performed QA/QC. APTIM identified the risks, hazards, and vulnerabilities of concern as it relates to the ability of the military to carry out its missions on the base that could be mitigated through investments and solutions.

Sea Level Vulnerability Assessment, Captiva Island, FL

Performed QA/QC and assisted with final phases. APTIM updated the sea level rise vulnerability analysis necessary for state funding eligibility and additional immediate preparatory actions to support applications for resilience and coastal infrastructure funding.

Sea Level Rise and Recurring Flooding Resilience Plan, Longboat Key, FL

Contributed to final submittal of the Resilience Plan report via providing reviews and assisting with updates. APTIM supported the final phase of the development of an adaptation plan to address sea level rise and recurring flooding for the Town of Longboat Key.

Education

- PhD Civil and Environmental Engineering, University of Central Florida
- MS Civil and Environmental Engineering, University of Central Florida
- BS Civil Engineering, Middle East Technical University, Ankara, Turkey

Professional License or Certification

- Engineering Intern, 2021, 73850, Active, Texas, 07/2029

Skills & Experience

- ✓ Data Collection & Analysis
- ✓ Community Engagement
- ✓ Technical Writing

Years w/APTIM

✓ < 1

8

YEARS EXPERIENCE

The Balmoral Group, Water Resources Engineer, January 2021– January 2023*

- Performed stormwater and drainage design for a variety of projects.
- Provided guidance on coastal vulnerability assessments and coastal protection projects.
- Served as the **"Sustainability Champion"** of the firm and played a key role in helping the firm to be the first consulting company to achieve a gold-level Green Business Certificate from the City of Winter Park, FL by implementing waste reduction and energy saving initiatives.

Project Engineer, FDACS Energy Equity Study, Statewide Florida*

Project assessed the distribution of benefits and burdens from energy production and consumption and the disproportionate impact of environmental hazards on low- and moderate-income Floridians. It included such vulnerable populations as lower income households, people of color, and rural communities to come up with an energy equity index. Involved in the data collection and report writing phases of the project.

Project Engineer, Statewide Resilience Dataset Outreach, Department of Environmental Protection, FDEP, Statewide Florida *

Project Engineer for the identification of all Florida Coastal communities that have completed a flooding and/or sea level rise vulnerability assessment or other similar analysis of the potential effects and extent of flooding and sea level rise on the community's critical assets. Collected all available spatial data and prepared metadata based on vulnerability assessments and GIS data.

**Projects and roles completed prior to joining APTIM*

MONICA THILGES COCHRAN

SUSTAINABILITY STRATEGY| **APTIM**

Professional Summary

Monica Thilges Cochran is Program Manager and Administrator with more than 15 years of experience in sustainability, energy efficiency and carbon markets, specializing in close client partnerships to design and deliver high-performing, innovative programs. She leads cross-functional teams to drive innovation and consistency across the DSM portfolio. Ms. Cochran has demonstrated success designing, launching and implementing programs with real market transformation impact. Led 50+ person teams in attaining revenue growth and strategic objectives while exceeding goals.

Education

- MBA, Finance, Accounting and Sustainability, Lundquist College of Business, University of Oregon, Eugene, Oregon, 2008
- Bachelor of Arts, Biology, Carleton College, Northfield, Minnesota, 2001
- Civil Engineering Technology, Old Dominion University, 2009

Skills & Experience

- ✓ Project Management
- ✓ Sustainability, Energy Efficiency and Carbon Markets

Years w/APTIM

- ✓ 6

15

YEARS EXPERIENCE

Relevant Experience

Southern California Edison

Support Southern California Edison's efforts to distill and disseminate pertinent innovative demand response emerging technology and market learnings from internal and external groups, including ETCC.

Focus on Energy, Wisconsin Public Service Commission, Madison, WI

Assist with the development, implementation and continuous improvement of the Focus on Energy Program portfolio and operational strategy.

Senior Program Manager, Various Educational and Wastewater Facilities, Madison, WI

Responsible for successful design and delivery of multiple pilots and special offerings, including networked lighting controls, midstream lighting, and SEM-light offerings for schools and wastewater facilities.

Various Commercial and Industrial Facilities, Madison, WI

Provided hands-on administrative oversight for five commercial and industrial programs, including small business and agriculture.

Senior Program Manager, CLEAResult, Portland, OR, 2016 – 2017*

Managed a multimillion-dollar annual budget for the implementation of the commercial and multifamily new construction program. Oversaw the field implementation of the Multifamily Direct Installation Program. Provided management and development of over fifty direct and indirect reports.

Senior Program Manager, PECI, Los Angeles, CA, 2011 – 2016*

Successfully led the program through the launch phase and a redesign phase, significantly outperforming competitors implementing similar programs in other California utilities. Led effort to redesign and implement new organizational structure for Southern California teams; integrating teams from multiple legacy companies into the functional model. Managed a multimillion-dollar annual budget for the implementation of a highly innovative HVAC maintenance and market transformation program.

Program Manager, PECI, Portland, OR, 2010 – 2011*

Created and managed budgets and other financial and reporting deliverables. Assisted in the design of a highly innovative HVAC maintenance program. Managed operations team.

Project Manager, The Climate Trust, Portland, OR, 2008 – 2011*

Successfully recruited, evaluated and managed over 200 carbon offset project leads. Analyzed the financial statements and projections of multiple offset projects for viability. Conducted market outreach and education targeting potential donors and project developers. Researched and became the staff expert on forestry and chlorofluorocarbon offset projects.

**Projects and roles completed prior to joining APTIM*

JOEL FREEHLING

SUSTAINABILITY STRATEGY | **APTIM**

Professional Summary

Joel Freehling is responsible for the finance and administration functions of APTIM's large energy efficiency programs. Prior to joining APTIM, Mr. Freehling served as President of SBK New Markets Fund, Inc., a $35 million tax credit fund investing in energy efficiency, alternative energy and green building projects in low-income tracts in Chicago, Detroit and Cleveland. He also served as Senior Vice President, Energy Finance and Manager, Triple Bottom Line Innovations at ShoreBank, the largest US-based community development finance institution (CDFI). There, he directed sustainability efforts and was responsible for developing novel loan programs to promote investment in energy efficiency and green buildings. During his tenure, ShoreBank invested nearly $1 billion in green projects in its target markets.

Relevant Experience

Finance Director, Energy Smart Program, Entergy New Orleans, New Orleans, LA

Serves as the finance director for program; responsible for incentive processing and approvals; coordinating budgeting and payments to all vendors and subcontractors.

Finance Director, Focus on Energy, Wisconsin Public Service Commission, Madison, WI

Develops the policies and procedures for approving incentive payments, processing implementer invoices, and administering program funds. Serves as Focus on Energy's representative on the Investment Committee of Technology Investment Fund I and II, loan funds employing creative financing structures to promote energy investments in large commercial and industrial facilities.

Senior Program Manager, APTIM, Madison, WI

Project Manager for APTIM's role as coordinator of ARCH – a collaborative effort among 11 of the largest universities in Chicago

Education

- MA, Anthropology, University of Florida, Gainesville, 1994
- MA, Anthropology, Stony Brook University, New York, 1994
- BA, Anthropology, University of Michigan, 1992

Professional License or Certification

- Certificate Program, Banking, Stonier Graduate School of Banking / Georgetown University, Washington DC, 2004

Skills & Experience

- ✓ Community Rating System
- ✓ Hazard Mitigation Planning Expertise
- ✓ Program and Project Management
- ✓ Public Outreach

Years w/APTIM

✓ 6

23

YEARS EXPERIENCE

that work together to identify energy saving opportunities on their campuses.

Project Manager, Sustainability Services, City of Chicago, Department of Aviation; Chicago, IL

Project Manager for APTIM's efforts as sustainability consultant for Midway and O'Hare airports. Specific efforts include serving as energy manager for O'Hare and developing a multi-year strategic plan to reduce energy usage by 20%, resulting is annual energy cost reductions of more than $5 million.

Linden Resiliency Hub Plan, City of Columbus, OH

Worked with the City of Columbus to create resiliency hub guidance to serve the low-moderate income (LMI) neighborhood of Linden. The purpose of the Resilience Hub is to help residents of Linden prepare for and bounce back from neighborhood and city-wide disruptions and threats.

TIMOTHY OLSON

PROJECT IMPLEMENTATION PLAN | **APTIM**

Professional Summary

Mr. Timothy Olson is a visionary public policy attorney and a hands-on project manager with over 10 years of experience building expertise and sharing information to solve energy and environmental crises. Mr. Olson is passionate about building strong relationship networks of leaders and executives to collaborate on high-impact, large-scale strategy and change projects. His areas of expertise include energy policy, markets, and environmental protection.

Education

- JD, Vermont Law School
- MS, Environmental Management, Vermont Law School
- BA, Connecticut College

Skills & Experience

- ✓ Community Rating System
- ✓ Hazard Mitigation Planning Expertise
- ✓ Program and Project Management
- ✓ Public Outreach

Years w/APTIM

✓ 21

Relevant Experience

E-Mobility Solutions, Denver Climate Action Rebate Program; City of Denver, Denver, CO

Assisted in design and development of rebate, registration, application, and reimbursement system. Researched and developed relevant terms and conditions and other rebate legal and procedural documents.

10

YEARS EXPERIENCE

Aspen Institute Energy and Environment Program, Senior Project Manager, Washington, DC, 2006–2017*

Engaged industry leaders, experts, and policymakers to explore tough challenges and promising solutions at the intersection of energy policy, markets, and environmental protection. Organized and curated domestic and international events to facilitate executive-level discussions and idea generation to address complex global energy and environmental issues. Created annual meeting to examine impacts of clean energy and expanded from 30 to 60 participants. Convened iterative set of gas and oil production dialogue-based meetings for executives to discuss regulation of unconventional resources. Researched and produced policy analysis, grant applications, project reports, videos, and marketing materials. Interviewed, trained, and mentored over 20 junior and administrative staffers as well as interns.

Senior Advisor, Chesapeake Green Fuels, Adamstown, MD, 2005–2006*

Secured more than $30K in state development grants to build experimental bio-diesel refinery. Recommended legal courses of action to take full advantage of tax credits, offered sound governance advice to senior management, and advised original investors regarding formalization of risky agreements.

Consultant, Investigative Group International, Washington, DC, 2004–2005*

Investigated market manipulation claims and documented improper conduct by short sellers. Provided confidential research and document review to law firms, corporations, investment banks, and hedge funds to address and solve legal issues.

**Projects and roles completed prior to joining APTIM*

AMY MARTINEZ, CHMM, PMP, TRUE ADVISOR

PROJECT IMPLEMENTATION PLAN | **APTIM**

Professional Summary

Ms. Martinez has over 18 years of experience, is a Certified Hazardous Materials Manager (CHMM) a Project Management Professional (PMP) and a TRUE Advisor. Ms. Martinez possesses a diverse knowledge in environmental consulting tasks while supporting clients to stay in compliance with federal, state, and local environmental regulatory requirements. She leads project pursuits and develops and manages project scopes, budgets, and schedules for state and local government clients and private sector clients in retail, logistics, telecommunications, hospitality, utility, and manufacturing markets. Her technical expertise includes solid/hazardous/organic waste management, zero waste and waste minimization, hazardous materials management, multimedia compliance auditing and sustainability consulting.

Education

- MA, Environmental and Resource Policy, The George Washington University, Washington, D.C.
- BA, Environmental Studies and Economics, Dickinson College, Pennsylvania

Professional License or Certification

- TRUE Advisor Certificate Program
- Program Management Professional - PMI
- CHMM

Skills & Experience

- ✓ Managing solid waste projects, supervising large field teams, and implementing complex project schedules
- ✓ Extensive commercial generator project experience and relationships

Years w/APTIM

- ✓ 14

18

YEARS EXPERIENCE

Relevant Experience

Project Manager; Reusable Foodware Program; Bureau of Sanitation, City of Los Angeles; Los Angeles, CA

APTIM is designing and implementing a pilot program to reduce single-use plastic and other foodware distributed by providers located in the disinvested neighborhoods of Boyle Heights, Pacoima, Wilmington, and South Los Angeles. Ms. Martinez is leading a team to transition food service providers away from single use plastics to reusable foodware through boots on the ground technical assistance and support. APTIM is developing multilingual outreach and educational material to promote the program and is administering a $500,000 micro-grant application and funding program. APTIM leads an advisory committee with key stakeholders in the reusable foodware community for the long-term planning of reusables within Los Angeles.

Project Manager, City of Los Angeles In-Sink Food Waste Disposal Pilot Program, City of Los Angeles, Bureau of Sanitation, Los Angeles, CA

Project Manager for the City of Los Angeles residential food scrap in-sink disposal pilot program. The object of the pilot program was to use residential food waste disposers to divert food waste from landfills to the sewer conveyance system and to the Hyperion Water Reclamation Plant (HWRP) in support of the City's waste reduction goals. The scope included a bench-scale treatability test to assess transformation rates of food waste in the conveyance system, waste characterization audits to evaluate residential food scrap diversion rates, marketing and community outreach within the pilot community, wastewater sampling of the pilot conveyance system, and a wastewater model. Overall execution and delivery of the project scope, maintaining the project schedule and achieving key project milestones, subconsultant management, internal project staffing, financial management, and monitoring of the contract's small business set aside goals. Provided quality assurance and quality control support for all project deliverables, assisted with the execution of the project's waste composition audits, facilitated monthly and quarterly progress meetings with City personnel, prepared a final report, and delivered a final presentation to City personnel on the results of the pilot project.

Project Manager, Confidential Retail Clients Waste Audits, Confidential Retail Clients, Various

Project Manager and Technical Lead for solid waste characterization studies for more than six retail and logistics clients, nationwide. Developing project scopes, schedules, and budgets, developing waste characterization audit protocols, developing and implementing training, analyzing solid waste data, and preparing reports and recommendations. Ms. Martinez interfaces with regulatory agencies on behalf of clients.

Project Manager, California Organics Management Program Development, Confidential Retail Client, California

Manages development and implementation of Organics Management Program Standards for several confidential retail clients with over 800 stores and distribution centers in California. Supports development of the Organics Management Program Standards to outline the client's legal environmental obligations for compliance with AB 1826 and SB1383, develops California-specific organics waste policies and procedures and identifies best management practices to implement in management of organic waste at retail stores and distribution centers. Assisted with evaluating organic waste management partnerships in California to assist with the management and diversion of organics from the solid waste stream. Support clients with annual waste audits at facilities to evaluate client's implementation of their organic waste management program.

Project Manager, Solid Waste Evaluations, AT&T, Various, California

Manage two field teams tasked with performing daily hazardous and universal waste segregation, transport, and disposal activities for approximately 264 locations in Southern California. Perform scheduling of field teams and waste pickups, track daily completion of field tasks, and communicate results with client. Monitors project budget, waste disposal schedule, waste profiling, and waste disposal records.

STEPHEN JOHNSON, PE, PMP, CEM, LEED AP

PROJECT IMPLEMENTATION PLAN | **APTIM**

Professional Summary

Mr. Stephen Johnson has more 11 years of experience in energy efficiency and sustainability projects. At APTIM, Mr. Johnson provides sustainability consulting services on energy, water, waste, and vehicle electrification.

The energy audits included technical assessments of existing buildings, utility analysis of energy bills, operational systems, and energy conservation measures. Several of the energy audits included the creation of energy models to calculate accurate energy savings. Reports resulting from the audits included analysis identifying low-cost/no-cost and capital improvement energy efficiency recommendations specifying energy use reductions, energy cost savings, installation costs, and financial return on investment. Authored recommission studies have consisted of telephone switch and data centers. Low-cost/no-cost energy conservation measures were identified resulting in significant energy savings. Mr. Johnson has also created and presented in several locations throughout Missouri an overview of the 2009 and 2012 International Energy Conservation Code. Trainings included an overview of the importance for the code, the requirements, and enforceability of the code.

Prior to working at APTIM, he consulted on the design and construction of commercial, multi-family, and single family buildings. Projects included supporting LEED certification efforts and working with municipalities to amend and create building energy efficiency codes to meet desired sustainability objectives.

Education

- MS, Civil Engineering Building Systems, University of Colorado, Boulder, CO
- BS, Architectural Engineering, University of Colorado at Boulder, Colorado

Professional License or Certification

- Professional Engineer, Illinois, 0620067702
- Project Management Professional, 2103365
- Certified Energy Manager, 19407
- LEED AP BD+C

Skills & Experience

- ✓ Energy Efficiency and Reliability Audits
- ✓ Utility Analysis
- ✓ Creation of Energy Models
- ✓ Energy End Use

Years w/APTIM

✓ 7

11

YEARS EXPERIENCE

Relevant Experience

Project Manager, Chicago Department of Aviation, Chicago, IL

Supports both O'Hare and Midway airports in achieving their sustainability goals which include energy benchmarking the facilities, documenting energy and water efficiency projects, reviewing capital projects for the inclusion of efficiency opportunities, and communicating an internal energy and water dashboard for the airports. Oversees waste and recycling efforts.

Senior Engineer, Residential Resilience Audit Program, Center for New York Neighborhoods

Serves as primary consulting engineer on all resiliency audits and is responsible for developing energy efficiency recommendations for rehab plans.

Data Analyst, Community Energy Savers Program: AEP Ohio

Received weekly AEP Ohio incentive program data that he continuously reviewed for any inaccuracies or conflict with program guidelines. The incentive data was converted into participation data and communicated to the project team. Generated weekly program dashboards for distribution to each participating community. Modified the program website weekly with updated goal progress and messages to inform the customers in the community.

Energy Engineer, Renewable Energy Evaluation: Focus on Energy, Madison, WI

Assisted in the creation of the request for proposal, application template, the evaluation of proposals, and the awarding of incentives for the Renewable Energy Competitive Incentive Program offered by Focus on Energy in Wisconsin. Evaluation of the proposals included review of financial need, innovation and optimization of the system, and for accurate calculations.

Energy Engineer, ComEd Recommissioning Program, AT&T, Chicago, IL

Performed a recommission study of a telephone switch and data center. Executing this project through the ComEd Recommissioning Program, identified low-cost/no-cost energy conservation measures that resulted in significant energy savings.

Energy Engineer, Duke Energy–Smart Building Advantage Program, OH/SC

Lead engineer supporting work done in Ohio and South Carolina for the Duke Energy Smart Building Advantage (SBA) Program. Building site assessments for existing buildings were conducted to evaluate potential energy conservation measures to determine energy and cost savings, including incentives. A large church and multiuse building was assessed using the energy simulation software, eQuest, to accurately determine energy and cost savings. APTIM assessed a large manufacturing facility for energy efficiency opportunities, reviewing processes and investigating energy conservation measures.

SHELLEY RICE

TRAINING | **APTIM**

Professional Summary

Ms. Rice has 18 years of public affairs experience working on IRP and MMRP programs at Superfund, CERCLA, and RCRA cleanup sites. She routinely develops public affairs and community relations programs to facilitate communication to homeowners, schools, and local businesses as well as stakeholders and regulators.

Relevant Experience

Dugway Proving Ground Southern Triangle Area A Munitions Response Site Investigation (CEHNC, Hunstville District)

Community Involvement Specialist. Assisted CEHNC with Community Involvement activities required during the Remedial Investigation phase of the project. This included updating the Community Involvement plan, conducting community interviews, planning and facilitation public meetings (including logistics, presentation materials, public notice drafting and coordinating of publishing, and attendance).

Call Center Manager, GOHSEP Hurricane Ida Sheltering Program, LA

Emergency Response project providing non-congregate housing solutions to residents of Louisiana impacted by Hurricane Ida. Managed team of over 40 Community Outreach Specialists and Call Center subcontractor to quickly assess need for emergency shelter, aid impacted community members throughout the application process.

CPB Rapid Response Water Line Tie-In and PFAS Sampling at Ellsworth AFB, South Dakota (USACE, Omaha District)

Community Involvement Specialist. Assisted USACE and the US Air Force (USAF) in developing an outreach program for potential health risk associated with PFOS/PFOA exposures in drinking water supplies.

Education

- BA, American Studies, University of California, Davis

Professional License or Certification

- Public Relations Certified, University of California, Davis Extension Program, 2008

Training

- CEQA 8-hour training

Skills & Experience

- ✓ Community Relations and Public Affairs Program Development
- ✓ Outreach Program Development
- ✓ Public Meeting Facilitator

Years w/APTIM

✓ 6.5

18

YEARS EXPERIENCE

Approach for Scope of Work

Our intent for the sustainability roadmap is to support the City by aligning with the objectives of elected officials, internal departments, residents and regional partners to draw the most positive attention to the City, raise awareness to increase participation in initiatives and streamline accessibility of funding to continue programs. The steps outlined in the proposed approach will support the cultivation of the data necessary to inform the sustainability strategy and provide ample justification for internal decision-making, garnering stakeholder support and pursuing funding for eligible projects. APTIM commits to completing all items as outlined in the scope of work.

Figure 2 on the following page depicts our team's proposed project timeline. The approach includes completing Tasks 1 and 2.1 concurrently to optimize opportunities to build and enhance relationships between the Sustainability office and data providing departments and programs throughout the project. Additionally, as feasible, the results of the inventory should inspire the strategies in the roadmap. These tasks are intended to be completed within the first six months of the project. The second half of the project will focus on the facilitation of workshops, iteration of the roadmap based on participant feedback, verification of the implementation plan and staff training. In practice, the most value of roadmap development is derived from interviews and workshop discussions. Often opportunities for immediate implementation arise and having time to verify and facilitate follow-up conversations with partners is extremely useful. Hosting workshops at the very end of a project can lead to missing out on initiating or furthering implementation while the consultant is still actively working on the project. The APTIM team intends to deploy its full toolbox of engagement and outreach techniques to ensure participation in the workshops and collection of critical information from interviews and discussions.

A typical challenge in developing greenhouse gas inventories is the lack of transparency in the algorithm of certain software programs or the lack of ability to log data assumptions in as data is entered. As a result, often, inventories are difficult to recreate by new staff if needed or compare from year to year. By utilizing a spreadsheet-based approach and PowerBI if available, staff will be able to have a customized tool with in-depth instructions and metadata built into each entry without the cost of needing to subscribe to software annually. APTIM does have experience in utilizing various emissions and energy use tracking software (e.g., Clearpath) if staff prefer to subscribe to one and we would adapt our approach as needed while still providing supportive content for training. **Figure 3** shows an example PowerBI application that APTIM has developed for City of Davis' Waste Audit program. APTIM will gather the best site-specific data available, fill in any gaps with national or regional data sources and a proven quality control review process to avoid entry or unit conversion errors.

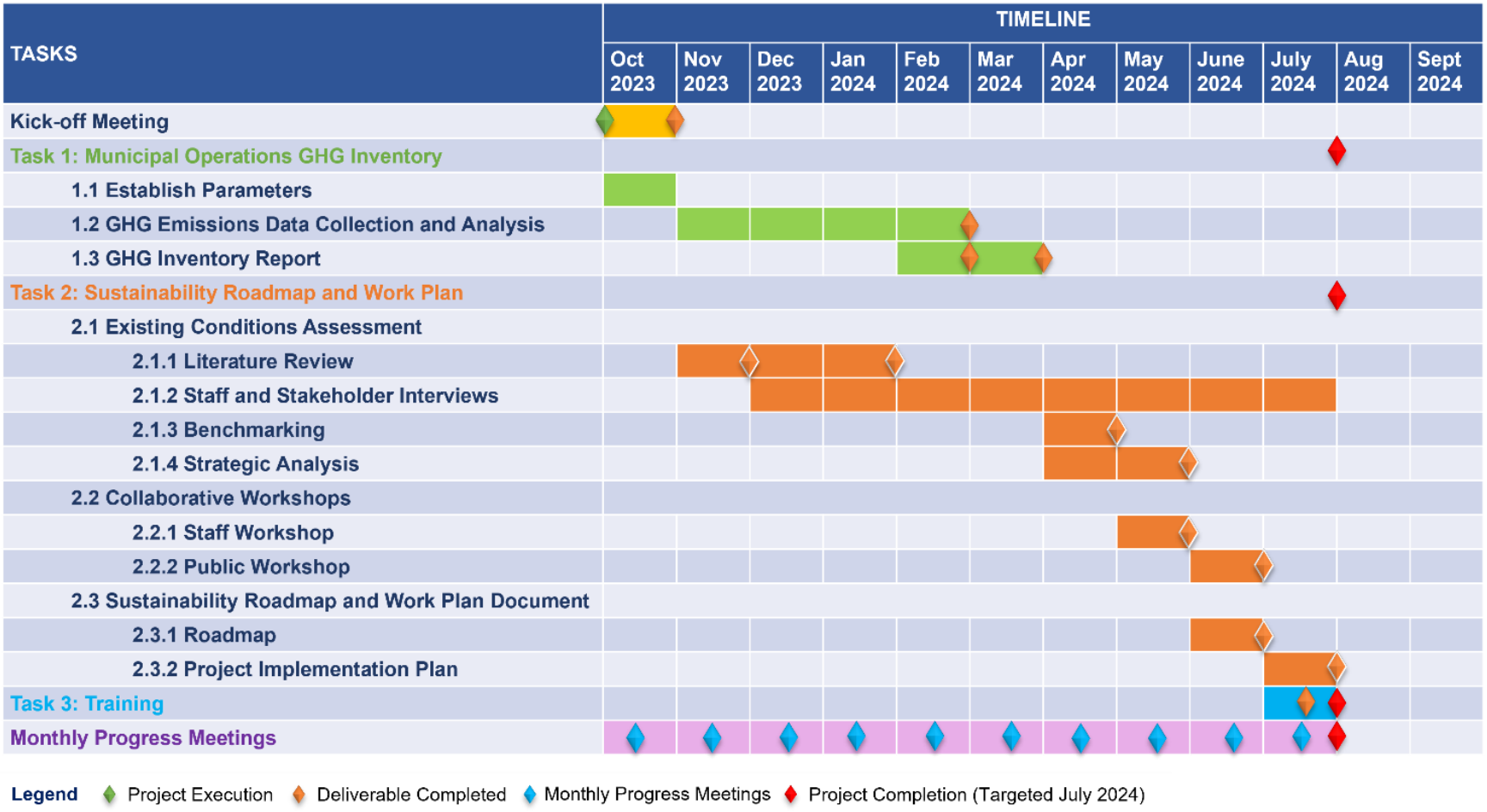
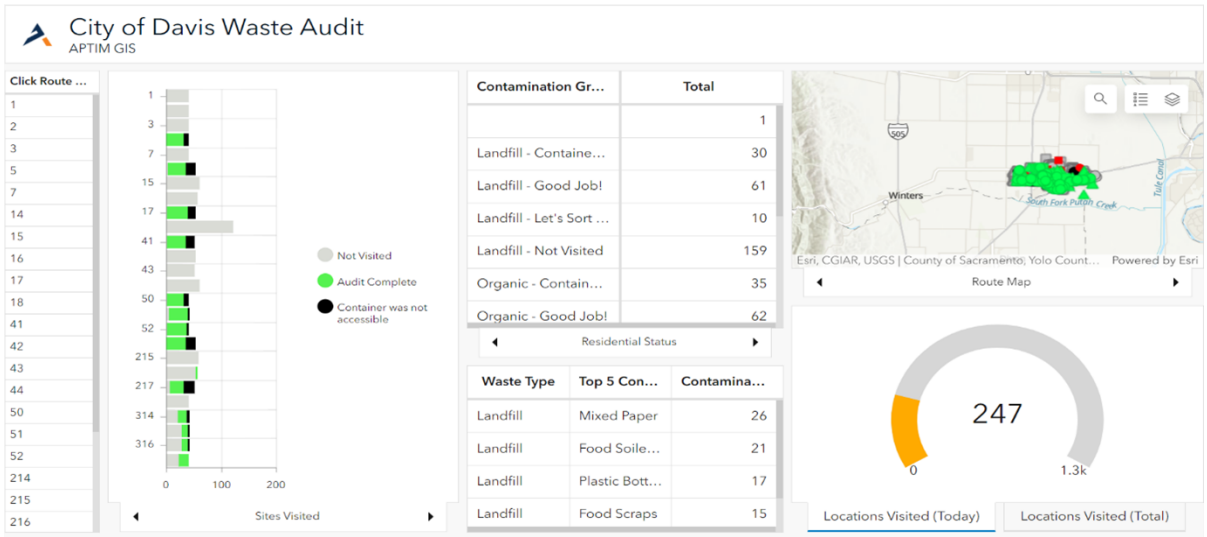


Figure 2 *Project Timeline*



APTIM developed a custom application to audit residential and commercial municipal waste pickups for the City of Davis, CA.

Figure 3 *Example PowerBI Application Illustrating City of Davis' Waste Audit*

Task 1 Municipal Operations GHG Inventory

1. Establish Parameters

APTIM will begin by defining the inventory boundary for the City of Deerfield Beach and will ensure the selected and developed methodology aligns with the Global Protocol for Community-Scale Greenhouse Gas Inventories 1.1 (GPC 1.1), C40 Cities Protocol and the Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines). A clearly defined boundary will ensure consistency and accuracy in the assessment. Initially, a geographical boundary of the City of Deerfield Beach will be identified that shall be maintained for all future inventories to ensure consistent comparison to track the City's GHG reduction targets.

Global protocol-based inventories are classified into the following sectors: Stationary energy usage (i.e., Residential and commercial buildings, Manufacturing, Construction, Agriculture and Fishing Activities, Energy production, and Fugitive emissions), Transportation (i.e., road, rail, waterborne, aviation, and other off-road transportation), Waste Management (i.e., solid waste disposal, biological treatment, incineration, and wastewater related activities), Industrial processes and product use (IPPU), Agriculture, Forestry and other land use (AFOLU), and any other relevant emission categories. The inclusion of each of these sectors is based on their relevance to the City of Deerfield and the availability of consumption data for the selected 2017 and 2022 timeframes. APTIM has experience undertaking the GHG inventory of Scope 1 (i.e., fuel and energy use), Scope 2 (i.e., purchased electricity), and Scope 3 (i.e., water, wastewater, commuting, staff travel, procurement) emissions and will address each scope accordingly. Typically, government operations inventories include buildings, wastewater treatment, transportation (fleet), solid waste facilities, streetlights and traffic signals, water supply and fugitive and process emissions. The boundary and scope of the assessment could be refined to only include certain administrative departments or campuses if desired. The GPC has established two levels of reporting: BASIC (Covering Scope 1 and 2 emissions from stationary sources and transportation, and Scope 1 and 3 from wastes) or BASIC+ (includes the above and additionally emissions from Industry processes and product use, Agriculture, Forestry and other land use, and transboundary transportation). Reporting format will depend upon selected parameters. If relevant, the inventory may include emissions from the six primary gases required in most national inventories under the Kyoto Protocol and the Paris Agreement: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

The project management plan and schedule, and the proposed menu of parameters and data sources have been developed in this proposal based on the above boundary, scope and

reporting level considerations. A kick-off meeting with the project team and City staff will be held within the first two weeks of contract execution. The project management plan and schedule will be reviewed at the meeting. A menu of parameter options will be presented for discussion with the possible data sources and providers. Based on staff feedback and direction, the parameters, and data to be included in the inventory will be finalized.

Deliverable and Schedule: Kick-off meeting, project management plan, project schedule, and proposed menu of parameters and data sources for inventory will be delivered in Month 1.

2. GHG Emissions Data Collection and Analysis

APTIM will provide a list of the potential data sources for each sector to be included in the inventory and coordinate with staff to determine the most efficient collection outreach methods.

For Stationary Energy Emissions Data:
If the City is not already tracking energy consumption by building or submeter, the data will be requested from FPL or assembled from utility bills or fuel records. Please note issues with electric bills often arise at this step in the approach. Electric meter addresses sometimes do not align with billing addresses or identification numbers from the utility. To avoid data consistency issues, the data could be analyzed in bulk rather than by facility. As a note, if the City is interested in participating in the FPL SolarNow program or the EPA's Energy Star Portfolio Manager, there may be opportunities to link or extract input data to the inventory more readily on an annual basis. When local and state emissions factors are unavailable, data from the Environmental Protection Agency's (EPA) Emissions & Generation Resource Integrated Database (eGRID) for the Florida Reliability Coordinating Council (FRCC) subregion. APTIM will explain implications of data parsing or combining on capability of tracking emissions reduction measures as part of the roadmap. It was identified that all facilities operated by the city are fully electric. Hence, irrelevant stationary energy emissions are ignored.

For Transportation Emissions Data:
The annual average of Vehicle Miles traveled (VMT) estimated will be determined for fleet vehicles based on available records. If VMT data is unavailable, but fuel sales within the geographical boundary is available, relevant methodology from the GPC guidelines will be applied. Appropriate emission factors for light and heavy-duty vehicles available in the ICLEI LGO Protocol, US EPA Emission Factors Hub or IPCC Guidelines will be determined for each fuel type. Appropriate calculation methods will be applied to other transportation types based on the GPC guidelines.

For Emissions from waste generation:

All sources and quantities of waste generated within the city boundary will be identified. Waste Disposal and treatment methods used within the city will be determined. Based on the data collected, emissions from waste will be calculated using the corresponding emissions factors and methods for each type of waste treatment as outlined in the GPC guidelines.

Emissions related to the West Water Treatment Plant will be measured by assessing treatment processes, estimating methane and nitrous oxide emissions, quantifying emissions related to energy consumption within the Plant, accounting for GHG released from sludge management if applicable. Any indirect emissions associated with the treatment plant will also be included. The emissions from wastewater treatment inventory will be performed according to GPC guidelines.

For the remaining Sectors:
Data for the remaining selected sectors and parameters from Task 1.1 will be collected from the appropriate individual data providers and analyzed. Relevant assumptions and estimations will be made wherever direct data is not available. APTIM will ensure proper documentation and vetting of these assumptions.

A GHG inventory with the relevant data will be developed and analyzed for trends and potential opportunities. The data will be reviewed for quality before being entered in the spreadsheet or PowerBI database. Equivalent greenhouse gas emissions by sector will be calculated based on the collected consumption data and emissions factors. Each calculation and factor will be fully described to assist with training and future use of the database. APTIM will coordinate with City staff on customization of the database.

Deliverable and Schedule: Final list of data sources to be used in inventory, request to data providers for staff review, complete database of emissions for 2017 and 2022 will be delivered in Month 5.

3. GHG Inventory Report

APTIM will prepare the Greenhouse Gas Inventory Report that is inclusive of the requested scope items. An executive summary will be included, highlighting key findings related to total emissions by sector, differences between the 2017 and 2022 datasets, comparisons and trends by sector and scope and comparisons to comparable municipalities and data available from regional and citywide inventories. Charts, tables and graphics will be generated to clearly communicate pertinent information from the inventory. The methodology and inventory results will be described in detail.

A forecast for year 2050 based on the business-as-usual emissions trajectory will be provided. The forecast will consider existing federal climate related energy and transportation policies and will assume continuation of capital programs and employee totals based on input from staff.

Reduction strategies and scenarios will be analyzed to assess impacts to the business-as-usual forecast. Moderate and aggressive scenarios will be developed based on a series of reduction strategies. The potential reduction by a strategy will be based on the Broward County Government Operations Reports, tracked reductions from comparable municipal inventories and output from readily available tools (e.g., EPA municipal planning tool, **Figure 4**). Typical strategies include transitioning the fleet to electric vehicles, increased use of alternative fuels, consolidation of facilities, virtual meetings, energy conservation, incentive programs and administrative policy changes. Based on the outcomes of the reduction scenarios, realistic greenhouse gas reduction targets will be suggested for 2050 and other interim years that may be useful for planning or alignment with ongoing initiatives.

Figure 4 *EPA Tools and Resources Supporting Local Governments in Meeting Climate and Energy Goals*

The report will be provided in draft form for City staff review. Comments will be requested to be returned from staff within two weeks. The APTIM team will be available for meetings with staff to review the draft and feedback. A final ADA compliant report will be delivered approximately one month after the draft report. All reporting principles will meet requirements for compliance with the Global Protocol for Community-Scale Greenhouse Gas Inventories 1.1 (GPC 1.1). and will be presented in a manner acceptable to C40 Cities. Once the final deliverable is approved by staff, slides summarizing the report will be prepared and presented to the Commission as scheduled.

Deliverable and Schedule: The DRAFT Greenhouse Gas Inventory Report inclusive of scoped figures and graphics, minutes from staff review meeting, final report with recommendations and PowerPoint slides for presentation to the Commission will be delivered in Months 5 and 6.

Task 2 Sustainability Roadmap and Work Plan

APTIM understands the importance of identifying climate change mitigation and adaptation goals, inventorying of GHG emissions, setting of data-based targets, and the creation of a practical and cost-effective implementation plan to ensure that the sustainability vision of the community is carried forward. APTIM proposes to follow closely the aligned tasks provided by the Sustainability Plan Scope of Work, while including best practices and knowledge gained from our subject matter expert's experience implementing sustainability and resilience projects throughout the country. Our approach includes the steps outlined in **Figure 5**.

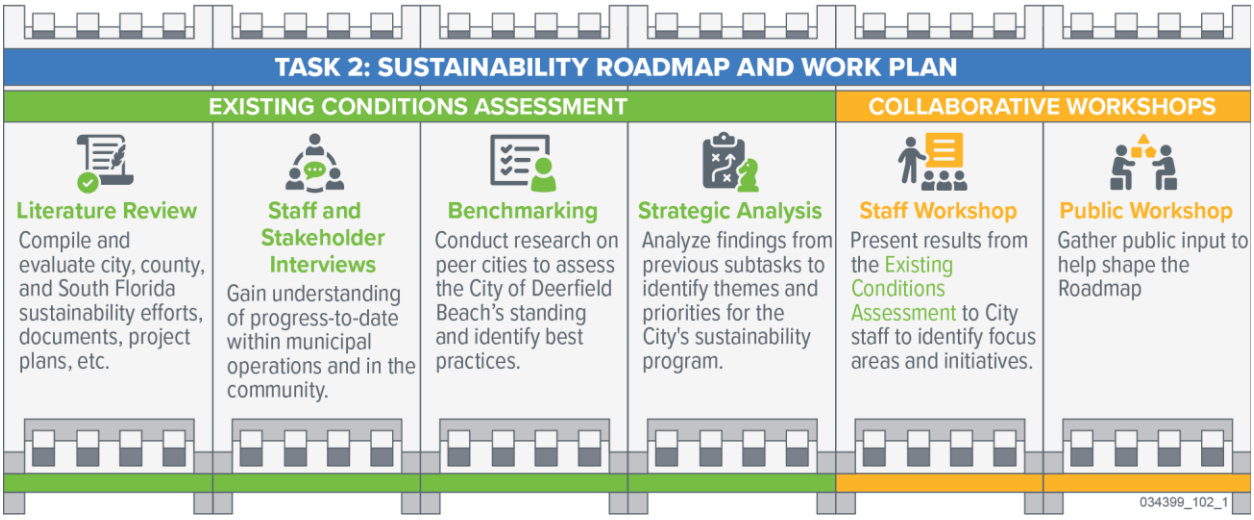


Figure 5 *Summary of Task 2 Scope Items*

1. Existing Conditions Assessment

1.1 Literature Review

The intent for the literature review is to comprehensively compile pertinent information that will serve as the foundation for the strategic approach and assist as a reference for future implementation, decision-making and participation in sustainability networks or resource opportunities more readily. With a rich network of connections, including a strong affiliation with the South Florida Regional Climate Compact, APTIM will gather and assess relevant documentation efficiently and effectively. The Project Manager, Dr. Samantha Danchuk, will direct the search for materials and obtain data from Broward County sustainability initiatives that may serve the City. She was involved in the development of Broward County's sustainability and resilience plans and policies; therefore, we are uniquely positioned to locate and interpret these vital sustainability and resiliency related documents seamlessly, streamlining the literature review process.

Our literature review will encompass an in-depth analysis of key materials, including City resolutions, ordinances, planning documents, 2019 Investment Grade Audit Report and 2017 Sustainability Summary. Moreover, our engagement with Broward County documentation and Southeast Florida Regional Climate Compact resources will enable us to grasp the broader regional context, particularly in relation to climate change mitigation and adaptation. Best practices from networks the team engages with including the Florida and Southeast Sustainability Directors Network, Urban Sustainability Directors Network, Aspen Institute, Rocky Mountain Institute, National Renewable Energy Laboratory and Department of Energy will be catalogued. The literature review will support a comprehensive understanding of the opportunities and potential obstacles to implementing various strategies to give an advantage to the City of Deerfield Beach.

As part of the literature review, APTIM will also utilize readily available tools to extract additional data describing relevant elements of sustainability. Using the Broward County GHG Inventory[1] and Deerfield Beach energy consumption data from the NREL SLOPE tool [2], citywide emissions from Deerfield Beach is estimated to be about 7% of the total emissions from Broward County. **Figure 6** shows the City's GHG emissions and their million metric tons CO2 equivalent (MMTCO2e) by sectors. Such information may add additional context to the roadmap and help prioritize strategies by sector. Strategies implemented by the City will serve as demonstrative projects for the community.

Emissions by sectors	%	MMTCO2e
Energy Generation (Upstream)	40.00%	0.42
Transportation	33.00%	0.35
Residential Energy	14.00%	0.15
Commercial Energy	13.00%	0.14
Industrial Energy	0.30%	0.01

***Figure** 6 City of Deerfield Beach's GHG Emissions by Sector (MMTCO2e)*

Deliverable and Schedule: The list of content to be compiled and reviewed for this task will be provided to staff for review in Month 2. A summary of literature reviewed inclusive of citations will be in Month 4.

[1] https://www.broward.org/Climate/Pages/GreenhouseGasInventories.aspx
[2] Data Viewer (Net Electricity and Natural Gas Consumption) | State and Local Planning for Energy | NREL

1.2 Staff and Stakeholder Interviews

As competing environmental and social needs complicate short, mid, and long-term planning, it is crucial to develop a strategy where priorities are set, and adequate progress is made through proactive implementation. While considering a broad range of stakeholders and integrating varied priorities is not a new concept, these efforts have often been short-lived campaigns and initiatives that are understaffed, underfunded, and not intricately linked to the overall organizational strategy. APTIM understands the importance of ensuring cross-stakeholder buy-in to the proposed action items, as well as collecting varied stakeholder feedback as a consideration during recommendations.

A core component of APTIM's outreach efforts includes driving engagement with the staff and stakeholders who can help us succeed. Recognizing that diverse perspectives contribute to a comprehensive understanding of the City's sustainability landscape, we will conduct targeted interviews with City staff, management, finance personnel, elected and appointed officials (as directed by staff), and key community stakeholders such as utility providers. These interviews will serve as a vital avenue for capturing insights and priorities from those directly involved in municipal operations and from key influencers in the community.

Our APTIM team has ample experience conducting in person, virtual, and phone interviews for various stakeholders, staff members, key personnel, and public entities. Our team recently led such efforts for our South Florida Military Installation Resilience Review (MIRR), where we were responsible for identifying stakeholders and relevant staff, connecting with partners, and conducting meaningful interviews. We understand the roles and responsibilities that local government agencies and internal government departments play in the overall efforts and progress of cities and are committed to obtaining input from all necessary parties.

Stakeholder, municipality, and staff interviews were conducted for South Florida entities, including Municipal Chief Resilience Officers, the South Florida Water Management District, the Nature Conservancy (TNC), the Florida Keys Aqueduct Authority, Sea Life Rescue, the Broward MPO, the Florida Department of Transportation, Districts 4 and 6 (multiple), Florida Power & Light, Homestead Electric, and United States Coast Guard. Interviews included a request for data, a discussion of potential vulnerabilities and potential cascading effects on the entities' operations and plans, and a preliminary review of specific adaptation strategies.

Our team is well versed in conducting efficient, organized, and deliberate interviews. We will focus on extracting high value data on brief phone calls or in person meetings with only true key personnel, so that no time or effort is wasted while still assuring that all interested and involved parties are included within this process. Detailed notes will be taken for each interview and organized so they fit the outline of the sustainability roadmap and fit it into specific categories such as city needs, sustainability strategies, implementation plan, and workshop discussion points that need to be further addressed and developed as a team.

Deliverable and Schedule: Meeting notes will be generated from each interview. Key findings will be summarized at the monthly progress meetings. Interviews will be conducted throughout Months 3 through 10 with follow up conversations as needed.

1.3 Benchmarking

Benchmarking study will entail a thorough comparison of key performance metrics, best practices, and industry standards, thereby illuminating areas where the City can enhance its sustainability strategies. By strategically examining data on greenhouse gas emissions, energy efficiency, waste management, and more, we will identify gaps and opportunities for improvement. The benchmarking process will not only provide a clear picture of the City's current standing but also serve as a roadmap for setting ambitious yet attainable sustainability goals. As benchmarks are typically tracked annually during the budgeting process, care will be taken to propose and collect benchmarks that are likely to continue to be available in the future and sufficiently represent program activity. APTIM will coordinate with the Sustainability staff to identify the peer cities to research and interview. APTIM's network will serve beneficially to connect with cities of interest in and outside the region. APTIM will develop and manage a performance management dashboard to report to track progress **(Figure 7).**

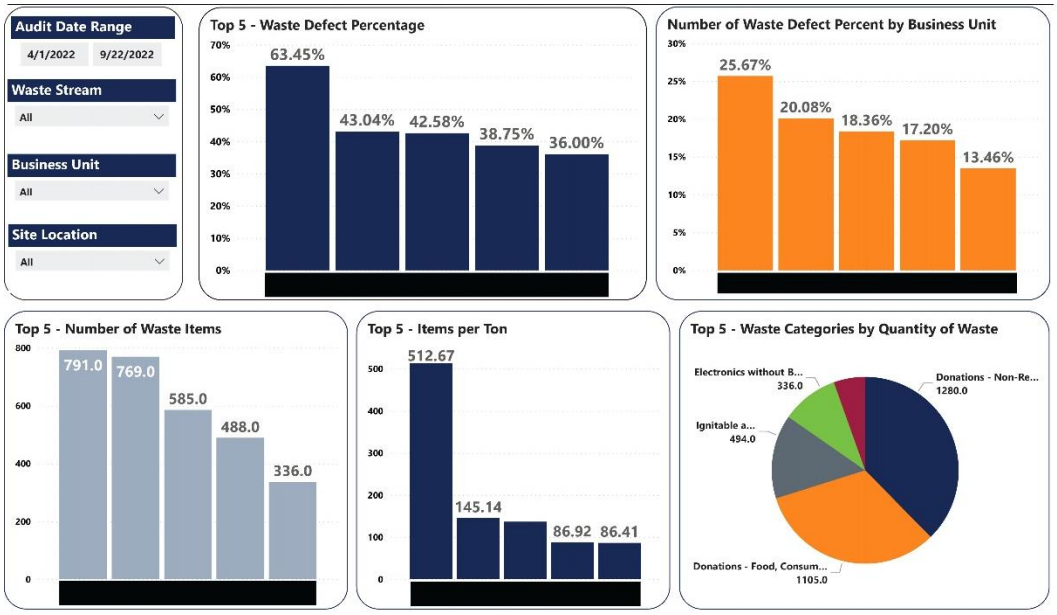


Figure 7 Example Dashboard Illustrating APTIM's Waste Management Tracking Services

Deliverable and Schedule: A list of recommended benchmarks will be delivered. A summary of benchmarking research, notes from interviews and recommended benchmarks will be delivered by Month 7.

1.4 Strategic Analysis

Figure 8 *United Nations' (UN) Sustainable Development Goals (SDGs)*

GOALS AND AREAS OF FOCUS

As part of the literature review, APTIM will summarize the advantages, relevance or potential challenges of the various sustainability planning frameworks. In this task, APTIM will coordinate with staff to determine which framework to align with and then customize the priority strategies to fit the needs of the City. As an example of how this approach works, APTIM's Sustainability Strategy is guided by the United Nations' (UN) Sustainable Development Goals (SDGs), a set of 17 goals included within the 2030 Agenda for Sustainable Development to provide a shared blueprint for peace and prosperity for people and the planet, now and into the future **(Figure 8).** APTIM chose top priority areas out of the 17 UN goals that aligned with corporate activities and vision and then customized each goal. This process would be followed for the City of Deerfield Beach. Our example goals include:

BUILDING A FOUNDATION

- Establish ESG governance and oversight,
- Establish baseline impact in areas of waste, energy, and water for operation,
- Strengthen related policies and develop sustainable work processes.

INTERNAL OPERATIONS

- Update Greenhouse Gas Inventory annually,
- Align the City's Sustainability strategy with the UN SDGs,
- Develop robust sustainability benchmarking capabilities.

PEOPLE AND CULTURE

- Create a culture of inclusivity based on The Collaborative Way® framework, sparking resident engagement around Sustainability and Diversity, Equity, and Inclusion.
- Create initiatives focused on improving resident Health and Safety

STRATEGY FOR 2023 AND BEYOND

- Establish a Sustainability Roadmap,
- Establish short- and long-term reduction goals,
- Implement additional benchmarking.

Deliverable and Schedule: The potential strategic approaches will be presented to the City staff for consideration during a monthly progress meeting. Selected themes and priorities determined during discussion will be documents in monthly meeting notes.

Approach Reference: Energy Infrastructure Vulnerability Study, Miami Dade County Resilience Hub Strategy, Florida

October 2022 present

APTIM delivered a countywide risk assessment of electrical infrastructure and social vulnerabilities to support siting of resilience hub prototypes. APTIM developed a new methodology for weighting energy burden, local system reliability and infrastructure risk by census tract. A building evaluation tool was created to consider sustainable criteria for critical facilities and hubs. These project elements support a new framework for a sustainable network of community-focused resilience hubs to support residents during emergencies and in their day-to-day by providing a safe shelter and an energy resource in areas with the highest need.

RELEVANT ROADMAP ELEMENTS

- Analyzed strategic frameworks
- Analyzed data layers to determine areas of greatest need and prioritize issues of concern
- Identified performance indicators representing vulnerabilities
- Provided data to support strategy development in areas of power redundancy, energy efficiency programs, and efficient energy management strategies

2. Collaborative Workshops

APTIM's internal public engagement team will lead and facilitate the City staff and community member workshop components of this project. We will leverage our experience and relationships to maximize participation and input.

2.1 Staff Workshop

APTIM will identify key city staff to represent various instrumental departments and groups such as the Building Department, Code Enforcement, Community Redevelopment Agency, Community Services, Economic Development, Environmental Services, Finance and Budget, Information Technology, Parks and Recreation, Planning and Development Services, Risk Management, and Sustainable Management. Staff chosen to participate within the workshop will be chosen carefully, as attendees will need to be experienced, very familiar with the City's operations, and in management and supervisory roles so that they are able to help implement and develop sustainability efforts. The purpose of this staff workshop is multifaceted as it will provide attendees with foundational knowledge of key sustainability, climate, and resilience

topics and concepts as they relate to the City, an overview of the project (content and logistics), and a summary of results from the Existing Conditions Assessment, providing local and regional context. Key agenda items to be covered at the staff workshop are outlined in **Figure 9**.

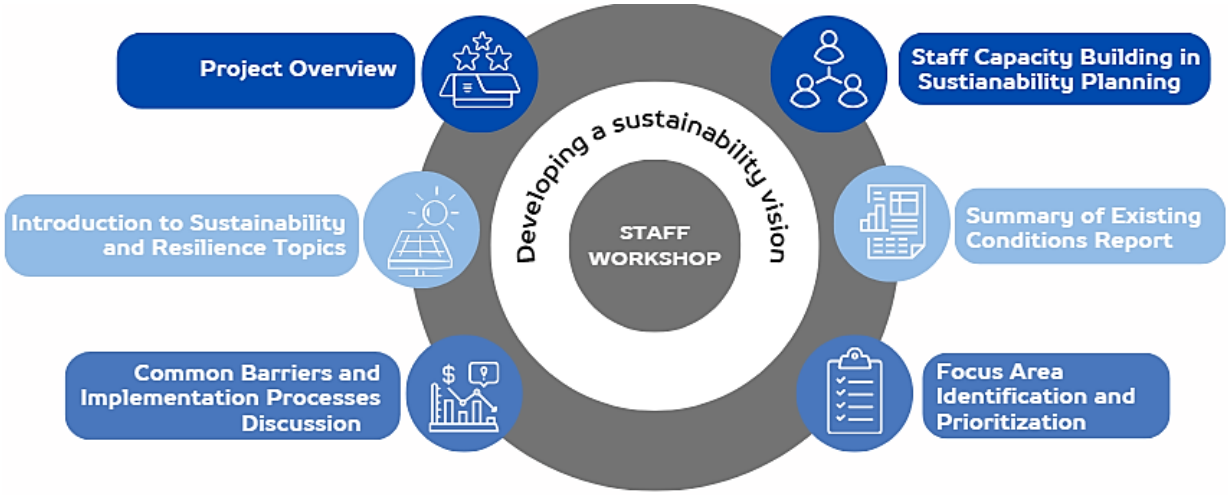


Figure 9 *Staff Workshop Key Elements*

Following content and report review, the APTIM team will lead an exercise with attendees to develop core focus areas and related project and initiative ideas that staff envisions fueling future sustainability efforts. APTIM has experience leading participation and discussion heavy workshops and exercises aimed at defining common goals, interests, and concerns **(Figure 10).**

Proven strategies include:

- ✓ Collecting feedback during workshops via sticky notes on maps
- ✓ Having staff members place dot stickers on priority strategies on posters around the workshop room
- ✓ Online voting through Survey123 or Kahoot
- ✓ Breaking into groups to discuss sustainability needs across departments but then also in same department to obtain practical steps for the roadmap
- ✓ Online surveying with specific questions related to annual goals, budgets and capacity in advance of workshop.

Figure 10 *Example of Group Exercises and Discussions from South Florida MIRR Workshops*

Deliverable and Schedule: Deliverables will include attendance records, meeting summary and polling results. The workshop will be scheduled at the convenience of annual staff operations.

2.2 Public Workshop

APTIM's engagement approach will consist of a key public workshop with the primary goal of educating and involving different audiences within the City in the final development of the City's sustainability vision. The public workshop will serve as a platform for community members to contribute their perceptive, insight, and goals regarding the City's sustainability vision and overall future and will capture key information and input that will fuel the development of the sustainability roadmap. The workshop will have an in person and a virtual option so that a greater audience can be reached.

The APTIM team will use this community event to:

- ✓ Ensure the community is involved in the development of the city's sustainability vision and the shaping of its roadmap.
- ✓ Gather input from the community on the city's current efforts and successes, and on their individual ideas, priorities, and goals for the city's journey to a sustainable future.
- ✓ Build trust and cooperation between the community and the city.
- ✓ Empower sustainability champions to support implementation of the roadmap.

Our team consists of outreach specialists with ample experience with network building and communication who will lead this initiative to best reach a representative variety of residents from various neighborhoods of the City. We know that public workshops often attract the same

small group of individuals with the luxury of time; not everyone in the community can attend public meetings while balancing the demands of work and family life. With that in mind, we will work with the City and its community partners to identify existing and well attended community and cultural events for maximum reach. Our experience tells us that working with nonprofits, local churches and local media outlets will exponentially increase our range of interests. Public feedback will be collected via interactive tools and surveys to document participation and support for priorities and strategies.

For those not available to attend the workshop, APTIM has tried, tested, and tracked different outreach tactics to effectively engage residents in other ways that could be utilized as part of this project. This institutional knowledge will be applied. A few promotional strategies are listed below:

- Create a sense of urgency based on the short-term availability of federal funding for resilience and unique opportunity to participate in the roadmap process and highlight immediate relevant issues. Clearly describe potential incentives and economic benefits.
- Employ boots on the ground, door to door introductions, or virtual invites to gain traction. Then, customize calls to action based on the target group and their industry language.
- Ask local social media and community influencers to promote the project. Consistently engage through social media and the local government channels.

At the minimum, the team will present virtually and record the workshop for future viewing online. Meeting notes will capture the summary of discussion at the workshop.

Deliverable and Schedule: Deliverables will include promotional content, informational hand-outs, presentation slides, meeting notes, polling results and recording of workshop.

3.1 Roadmap

There are many benefits to developing a sustainability plan or roadmap. Sustainability planning helps communities:

- Develop priorities in an efficient manner
- Foster accountability, what gets measured gets managed
- Galvanize the entire community around common goals
- Signal to prospective residents and businesses that it is a progressive community, while engaging and retaining existing members

The APTIM team has ample experience preparing reports and communications regarding sustainability and climate adaptation strategies. This includes the creation of 13 Sustainability Roadmaps for communities, ESG goal setting for two airports and GHG emissions reporting for

commercial customers. APTIM has also supported customers in reporting GHG emissions to third-party sustainability certification agencies.

The APTIM team will build upon the City of Deerfield Beach's 2017 Sustainable Management Plan and create a high-level actionable work plan. Building upon the insights gathered in Task 2, we will construct a strategic blueprint that outlines the City's sustainability journey. The roadmap will be a dynamic document that encompasses an actionable work plan spanning various recommended timeframes. It will encompass meticulously prioritized sustainability focus areas and conceptual initiatives within each of these areas, all of which will be meticulously tailored to the City's unique needs and objectives.

The roadmap will extend beyond setting goals, providing a comprehensive framework that includes recommended key performance indicators (KPIs) and the methods for data collection and management. Further, it will showcase the most impactful projects that have been identified through our strategic analysis—projects that not only exhibit high potential for positive change but are also cost-effective and feasible to implement. Concepts for key performance indicators will be sourced from peer cities in the Urban Sustainability Directors Network, existing datasets gathered during the Task 1 or environmental indicators monitored regionally.

Estimated budget values, along with potential funding sources or strategies, will be thoughtfully detailed. The costs associated with each strategy will be based upon recent comparable projects in the region, National Renewable Energy, Environmental Protection Agency and Department of Energy tools, and means and methods analysis as necessary. Each roadmap element will be further supplemented by a projection of its potential GHG and KPI impact, thereby underlining the tangible outcomes the City can expect from their sustainability initiatives. APTIM will leverage recent work sponsored by the Southeast Energy Efficiency Association and the Institute for Market Transformation which compared the cost effectiveness of various sustainability strategies. This robust and forward-looking document will serve as a practical guide, aligning the City's efforts with a strategic course of action that maximizes impact and fosters a sustainable future. As a note, counterintuitively, a challenge lies in seeing the impact of strategies in future inventories. Often, depending upon the scale of the strategy, inventory reports include an estimate of emissions reduction strategies because a reduction in energy or fuel use is not fully realized unless administrative policy was fully implemented, or no new sources or demands were added. APTIM will guide staff throughout the roadmap development to set expectations and ensure goals are met. APTIM will provide information useful in operational budget requests and grant applications.

Deliverable and Schedule: The Draft Roadmap will be delivered to staff for review and followed by a Final Roadmap inclusive of requested backup by Month 9.

Reference Approach: Broward Climate Action Plan
2015 and 2020

Dr. Danchuk led the development of two of the county's climate action plans inclusive of 100+ strategies for increasing climate resilience and mitigating greenhouse gas emissions. The approach for these plans including researching industry trends and identifying global, federal, state, regional and local initiatives or policies that were relevant to the county. Through public workshops and steering committees, popular sustainability topics and initiatives were collected and vetted internally for feasibility. Additionally, elected officials and the Budget office were consulted to determine if certain items could be advanced expediently if support was available. Dr. Danchuk drafted the plan and briefed individual Departments to garner consensus and support before shared a public draft for further comment and revision. Assignments were made to Departments for implementation and aligned with KPIs.

Focus Areas Relevant to City of Deerfield

- Support internal ongoing sustainability initiatives
- Align with Regional Climate Action Plan
- Clean fuel fleet and EV infrastructure
- Policies and standards for mitigation
- Transit oriented development
- Sustainability checklists as part of government process
- Sustainable purchasing
- Plastic waste reduction
- Community education and engagement
- Local food systems and urban canopy
- Energy and water conservation
- Living shorelines and water quality

3.2 Project Implementation Plan

APTIM will coordinate with staff to sequence the strategies from the roadmap in a manner that is respectful of staff capacity, resources and budget while being opportunistic for grants and technical assistance programs. Action steps for each strategy will be organized according to annual milestones within a five-year plan.

Following to the development of a Sustainability Roadmap and Work Plan, it is essential to identify grant sources for implementation. APTIM foresees that grants will be researched for priority projects coming out of the roadmap as identified during the preparation of the report and stakeholder communications. Our core approach to navigating the grant process is outlined below.

- Conduct Research to Identify Needs and Funding Opportunities: As demonstrated in **Figure 11**, step one and step two of the "process for success" is our team will work to identify needs.

With decades of funding research/management experience, we understand the regulations and requirements associated with local, state, and federal funds. This expertise is crucial for securing funding, prioritizing programs/projects, expediting payment reimbursement, and mitigating project monitoring requirements.

- Assess Project Readiness: Step three of the "process for success" is assessing project readiness. APTIM, working with stakeholders will review individual projects to ensure proposed projects meet the grant agency's requirements for readiness and represent the best return on investment (ROI).
- Develop Grant Application: Step four of the "process for success" is developing the grant application. APTIM will assist with the applications for funding as appropriate, which could include collecting detailed information on project benefits, supporting data, letters of support, and budgets and eligibility based on grant regulations and requirements.

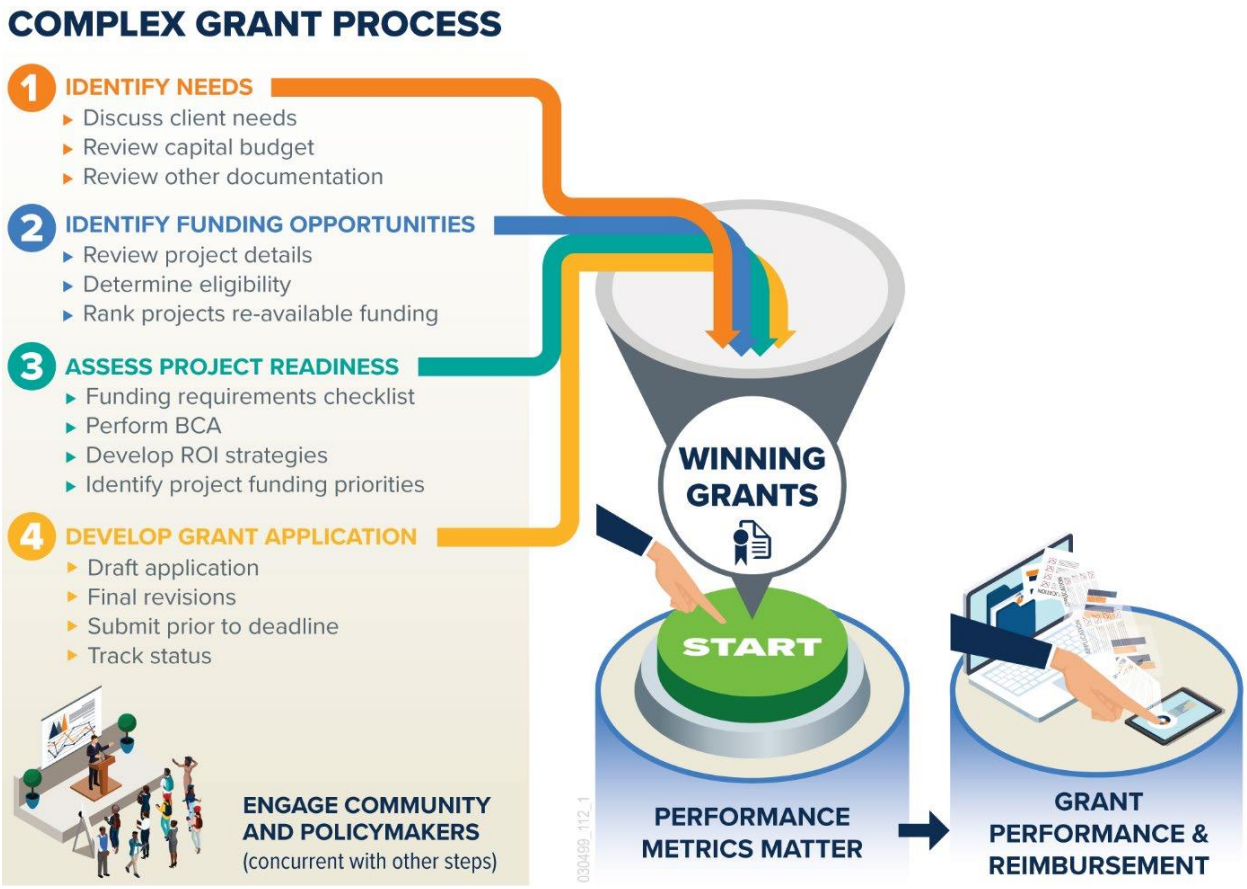


Figure 11 *Four Step Grant Process for Success*

APTIM's comprehensive work plan is designed to support the City's sustainability efforts from start to finish. By closely collaborating with the City, engaging stakeholders, providing ongoing support and capacity building to City staff throughout the organization, and facilitating knowledge sharing and best practices, APTIM is fully committed to helping the City of Deerfield

Beach advance its sustainability objectives and maintain consistency with state priorities. With our extensive experience and expertise in sustainability and project implementation, we are confident in our ability to deliver the high-quality professional services required to successfully execute, monitor, review, and report on the City's climate sustainability initiatives.

Deliverable and Schedule: The project implementation plan will be delivered to staff for review and followed by a final implementation plan by Month 10. Meeting notes from staff follow-up interviews necessary to finalize the plan will be provided.

Task 3 Training

Training will take an educational and systematic approach, covering key sustainability and GHG inventorying concepts and methodology, providing clear step-by-step instructions of how to perform future iterations of the GHG survey and reporting and building consensus around the city's sustainability vision. Core training components are outlined in **Figure 12**. The goal of the training is to provide staff members with the guidance, tools, and instructions necessary for them to be able to conduct future updates of the GHG emissions inventory on an ongoing basis. All vital data, calculations, methodologies, and information, used to produce the GHG inventory report and Roadmap will be thoroughly reviewed and explained so that trainees feel comfortable with the content and methodology and confident with maintaining the inventory for the future.

Figure 12 *Key Training Components*

The APTIM team will also work with the City of Deerfield Beach's Sustainability staff to convey data collection and analyses protocol and procedures to relevant City department and key personnel and directors. Key department heads will learn their role in the future collection and processing of key data and how to manage this effort to support the City's greater sustainablity vision.

The training will be conducted in person or virtually as directed by staff. Small group in person trainings yield better results in using computer tools and ensuring a process can be repeated. Virtual trainings yield higher participation and can be effective with conveying high level material, collecting feedback and facilitating group or agencywide learning.

Deliverable and Schedule: The training materials and slides will be provided for staff review in advance and the training will occur at staff convenience in Month 10.

City of Deerfield Beach
Municipal Operations Greenhouse Gas (GHG) Inventory Report, Sustainability Roadmap and Work Plan

Task Number	Task Name	Total Project
Tsk-001	Municipal Operations Greenhouse Gas Inventory	$ 21,090.00
Tsk-002	Sustainability Roadmap and Workplan	$ 25,330.00
Tsk-003	Training	$ 3,580.00
Totals =		**$ 50,000.00**

City of Deerfield Beach

150 NE 2nd Ave
Deerfield Beach, FL
33441
954-480-4200

Face Sheet
File Number: I.D. 2024-549

Agenda Date: 10/15/2024 **Status:** DEPARTMENTAL BUSINESS

In Control: City Commission

Title
Resolution 2024/ - A Resolution of the City Commission of the City of Deerfield Beach, Florida, adopting the Sustainability Roadmap encompassing a comprehensive initiative to serve as a framework for the City's Sustainability Program relating to resiliency, sustainability and a low-carbon future within the City; and providing for an effective date.

Recommended Action
Commission to vote on Resolution

Voting Requirement
Adoption requires a 3/5 vote of the City Commission

Background/History
In 2017, the City developed a high-level sustainability plan outlining past and ongoing initiatives as well as planned initiatives. Subsequently, several of those projects and others have been implemented, including municipal building efficiency upgrades, solar installation, compressed natural gas fleet build-out, composting, and more.

Current Activity
In September 2023, the City entered into an agreement with APTIM Environmental (APTIM) to conduct and prepare a Municipal Operations Greenhouse Gas Inventory Report (the Inventory), Sustainability Roadmap, and Work Plan (Roadmap). These deliverables will be utilized to assist the City with prioritizing actions to support the City’s sustainability program and setting GHG reduction targets.

GHG Inventory was completed for municipal operations for 2017 and 2022. The inventory was organized into three categories: stationary energy, transportation, and waste.

Following the completion of the inventory, APTIM conducted a staff workshop, a public workshop, a review of regional plans, and a review of existing City plans.

The resulting roadmap is comprised of 24 initiatives in the categories of: Building and Power Supply Sources, Transportation Strategies, Waste Strategies, and Community Strategies. The initiatives align with other existing plans and general best management practices. They are arranged with a phased approach over five years, with the following targets:

1. Achieve a 50% reduction in emissions from energy use by 2050.
2. Achieve a 30% reduction in transportation-related emissions by 2050.
3. Align targets with those of the Broward County Solid Waste and Recyclable Materials Processing Authority to reduce the volume of waste in landfills.
4. Achieve a 30% reduction in emissions across focus areas by 2050 as a result of city ordinances, code amendments, and policies.

5. Achieve a 15% reduction in emissions across focus areas by 2050 as a result of consistent and active public engagement.

Central to the roadmap are clear, measurable targets for emission reductions, providing a concrete framework to track progress. Each initiative includes steps to implement, measurable metrics, and estimated costs.

Staff will begin to implement year 1 initiatives upon adoption of the Roadmap. Year 1 initiatives include:

1. Expanding engagement with state, regional and utility partners to enhance energy efficiency and renewable energy collaboration.
2. Offering employees educational resources on water and energy conservation and incentivizing behavioral change through convenience.
3. Tracking implementation of municipal sustainability initiatives.
4. Conducting employee commute surveys and implementing Transportation Demand Management (TDM) strategies.
5. Offering educational resources and assistance to employees to reduce fossil fuel consumption.
6. Organizing waste reduction office campaign
7. Promoting sustainability initiatives at events and collecting data on public interests for sustainability initiatives.

The full Roadmap document is included in the backup of this item.

Recommendation
Staff recommends that the City Commission adopt the City of Deerfield Beach Sustainability Roadmap.

RESOLUTION NO. 2024/

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF DEERFIELD BEACH, FLORIDA, ADOPTING THE SUSTAINABILITY ROADMAP ENCOMPASSING A COMPREHENSIVE INITIATIVE TO SERVE AS A FRAMEWORK FOR THE CITY'S SUSTAINABILITY PROGRAM RELATING TO RESILIENCY, SUSTAINABILITY AND A LOW-CARBON FUTURE WITHIN THE CITY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, in 2017, the City of Deerfield Beach (the "City") developed a high-level sustainability plan outlining past and ongoing initiatives as well as planned initiatives; and

WHEREAS, in September 2023, the City executed an agreement with APTIM Environmental ("APTIM") to conduct and prepare a Municipal Operations Greenhouse Gas Inventory Report ("GHG Inventory"), Sustainability Roadmap, and Work Plan, which are to be utilized to assist the City with prioritizing actions to support the City's sustainability program and setting Greenhouse Gas reduction targets; and

WHEREAS, the GHG Inventory was completed for municipal operations for 2017 and 2002, consisting of the following three categories: stationary energy, transportation and waste; and

WHEREAS, subsequently workshops were held with both staff and the public by APTIM, along with review of regional and existing City plans; and

WHEREAS, APTIM along with City staff have created the Sustainability Roadmap, attached as Exhibit "A", (the "Sustainability Roadmap") which comprises of 24 initiatives comprised of the following categories: Building and Power Supply Sources, Transportation Strategies, Waste Strategies, and Community Strategies; and

WHEREAS, the Sustainability Roadmap sets forth an Actionable Work Plan commencing in the current Fiscal Year and going through Fiscal Year 2029; and

WHEREAS, upon adoption of the Sustainability Roadmap, it is City staff's intent to implement the year 1 initiatives, as set forth in Exhibit "A", during Fiscal Year 2025; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF DEERFIELD BEACH, FLORIDA, AS FOLLOWS:

Section 1. The above referenced "Whereas" clauses are true and correct and made a part of this Resolution.

Section 2. The City Commission hereby adopts the Sustainability Roadmap, attached as Exhibit "A"

Section 3. The appropriate City officials are authorized to do all things necessary and expedient to carry out the aims of this Resolution.

Section 4. This Resolution shall take effect immediately upon adoption.

PASSED AND ADOPTED THIS ____ DAY OF _____, 2024.

CITY OF DEERFIELD BEACH

_____
BILL GANZ, MAYOR

ATTEST:

_____
HEATHER MONTEMAYOR, CITY CLERK

EXHIBIT A

City of Deerfield Beach

2024 Sustainability Roadmap and Workplan

Deerfield Beach
Florida

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Executive Summary

The Sustainability Roadmap for the City of Deerfield Beach is a comprehensive initiative designed to steer the municipality towards resilience, sustainability, and a low-carbon future. It builds upon insights from the Municipal Operations Greenhouse Gas Inventory (GHG), which analyzed the environmental impact of city operations. This roadmap serves as a guiding framework for the city's Sustainability Program's initiatives, focusing efforts in municipal operations rather than public projects or citywide policy. It is crafted to be efficiently managed by current staff within the anticipated budget, while also remaining informed by GHG inventory priorities and best practices regarding the return on investment for these initiatives.

This roadmap aligns with over 30 existing policies and initiatives in the City of Deerfield Beach's 2022 Comprehensive Plan[i] and 2023 Strategic Plan[ii], as well as regional climate change plans.

This roadmap draws upon critical resources such as the Broward County Climate Action Plan (CAP)[iii], the Southeast Florida Regional Climate Change Compact Regional Climate Action Plan (RCAP)[iv], and the Florida Energy Code[v]. These resources serve as foundational pillars for understanding the broader context of sustainability action within Broward County, Southeast Florida, and the state of Florida. While they provide valuable insights and guidance on regional and statewide sustainability goals and initiatives, it is important to recognize that this roadmap is tailored specifically to the City of Deerfield Beach's existing unique policy objectives and priorities. This roadmap focuses on delineating the city's own policy agenda and strategic priorities while capitalizing on benefits that are uniquely available to Deerfield Beach.

Informed by regional and national best practices, the roadmap focuses on key areas such as building and power supply sources, transportation, waste management, and community engagement. Each focus area is supported by tailored strategies aimed at reducing greenhouse gas emissions and enhancing overall efficiency. The Sustainability Roadmap includes over twenty strategies for Municipal Operations with clear steps for staff to achieve existing objectives by 2029, and five strategies for the broader community of the City of Deerfield Beach. Central to the roadmap are clear and measurable emission reduction targets, providing a concrete framework for progress. Short-term actions prioritize rapid and decisive measures, while long-term goals reflect the City of Deerfield Beach's enduring commitment to environmental responsibility.

The success of this roadmap relies on collaboration among city officials, community stakeholders, and residents. Active engagement is crucial to its implementation. The roadmap is designed with a focus on transparency, accountability, and adaptability, ensuring that the City of Deerfield Beach continues to *lead by example* in environmental stewardship as the sustainability landscape evolves.

Key strategies and targets:

- The Deerfield Beach 2024 Sustainability Roadmap targets significant emission reductions in energy, transportation, and waste sectors, reflecting the city's commitment to environmental sustainability.

- The roadmap outlines strategies within the Building and Power Supply Sources Focus Area that aim to achieve a 50% reduction in energy-related emissions by 2050 through efficiency upgrades, building retrofits, and energy conservation campaigns.
- A 30% reduction in transportation-related emissions is suggested by 2050 by transitioning to electric and compressed natural gas municipal fleet vehicles, implementing a fleet car-sharing program, and promoting sustainable transportation options.
- Aligning the City of Deerfield Beach's waste reduction targets with the Broward County Solid Waste and Recyclable Materials Processing Authority to decrease landfill emissions and enhance sustainable waste management practices will be crucial for effective regional collaboration. The roadmap recommends various strategies to increase waste-related sustainability including implementing plans and policies, expanding the DFB Compost program, optimizing waste collection, and organizing a waste reduction office campaign.
- A 30% reduction in emissions across focus areas by 2050 can be achieved through the enactment of city ordinances, code amendments, and policies promoting renewable energy, energy efficiency, and sustainable urban planning. Examples include amendments to the Land Development Code, a solar investment plan, green building standards, and a Solar-Ready Roof ordinance.
- An important cornerstone of the roadmap is the emphasis on community engagement. Strategies aim to achieve a 15% reduction in emissions by 2050 through active public engagement, educational campaigns, and fostering community involvement in sustainability initiatives.
- Collaboration and partnerships with regional and state agencies, local businesses, and community groups will be crucial to support collaborative sustainability efforts.

Introduction

The City of Deerfield Beach 2024 Sustainability Roadmap and Workplan serves as a strategic blueprint, synthesizing best practices from local and national sources to guide the municipal operations of the City of Deerfield Beach towards sustainability. The roadmap is rooted in a thorough examination of the municipal operations' greenhouse gas inventory and provides measurable strategies for reducing carbon emissions and addressing climate change.

For over a decade, the City of Deerfield Beach's Sustainability Program has been diligently working towards building a resilient and sustainable future. Guided by principles of environmental responsibility, community well-being, and operational efficiency, the program has spearheaded numerous initiatives aimed at driving positive change. Key among these initiatives have been performance savings contracts targeting energy efficiency enhancements, including building automation, lighting retrofits, HVAC system replacements, and upgrades to water plant efficiency.

Efforts have also been dedicated to reducing emissions, with notable achievements including the establishment of an on-site compressed natural gas (CNG) fueling station, the integration of CNG heavy-duty trucks into the city's fleet, and the City of Deerfield Beach Community Redevelopment Agency (DBCRA)-Freebee rideshare service utilizing 100% electric vehicles. Moreover, a concerted focus has been placed on expanding infrastructure to support electric vehicles, including the procurement and installation of electric vehicle charging stations at the Central City Campus.

The roadmap offers a comprehensive framework for continuing and focusing the advancement of the sustainability objectives of the City of Deerfield Beach through a structured approach. Divided into four primary focus areas—Building and Power Supply Sources, Transportation, Waste, and Community—the roadmap provides an in-depth examination of each focus area. Within these focus areas, strategies are outlined, delineating primary goals and the critical collaboration among city departments for successful implementation. Key Performance Indicators (KPIs), aligning with the city's Comprehensive Plan and Strategic Plan and local and regional efforts, are underscored to assess the efficacy of each strategy, alongside Potential Funding Sources and detailed implementation steps. The potential GHG reduction and cost of each strategy are estimated based on industry best practices, methodology and metrics established within the GHG inventory, and recognized trends and case studies of similar projects within comparable municipalities.

Roadmap Development

Staff Workshop

A workshop convened with city staff from departments of the City of Deerfield Beach was critical to the development of the Sustainability Roadmap. Staff shared updates on projects and policy implementation, verified information on operations and suggested strategies for integrating sustainability into operations.

Workshop Objectives

The primary objectives of the workshop were multifaceted:

- **Review of Greenhouse Gas Inventory:** Staff members engaged in a comprehensive review of the findings from the municipal operations greenhouse gas inventory. This deep dive into the emissions profile provided a foundational understanding of annual environmental impact.
- **Refinement of Sustainability Strategies:** A central focus was to discuss and refine proposed sustainability strategies. Through a collaborative session, staff examined existing approaches, suggested edits, recommended new strategies, and offered valuable insights to enhance the roadmap.
- **Alignment with Current Efforts:** Ensuring alignment with current city efforts and programs was a key consideration. Participants confirmed the compatibility of proposed strategies with ongoing initiatives, fostering a cohesive approach to sustainability.
- **Capture of Employee Perspectives:** The workshop provided a platform to capture the diverse perspectives and efforts of staff. Input from Departments such as Planning, Economic Development, IT, Sustainable Management, Fleet, City Administration and Engineering enriched the discussions and decision-making.

Pre-Workshop Survey

To set the stage for informed discussions, staff members received a pre-workshop survey. This survey aimed to gather feedback on greenhouse gas findings, insights into current sustainable efforts and city operations, and overall staff interest in sustainability initiatives. The valuable input collected through this survey laid a solid foundation for the workshop's agenda.

Breakout Sessions

During the workshop, breakout sessions were conducted to allow focused discussions on specific sustainability focus areas. These sessions facilitated robust exchanges, with participants offering feedback, suggesting edits, recommending new strategies, and providing additional insights and suggestions for the sustainability roadmap. Staff provided approval and expressed interested in the majority of proposed strategies. Forty-three comments or edits to the strategies were provided, inclusive of timeline updates, amendments to quantities or urgency proposed, and highlights of specific staff members or programs to be included. Repeated suggestions focused on providing staff incentives to promote sustainable actions, streamlining processes to make new practices user friendly and efficient, educating staff, and adjusting motion senser lights and HVAC regulation. The majority of staff requested that “sustainability champions” be acknowledged within each department to aid with implementation and collaboration.

Ongoing city sustainability projects and efforts mentioned during the breakout sessions included:

- Planning studies conducted for a Commuter Rail station in Deerfield Beach at Dixie/ SE 4th St.
- Flexible work hour discussions within Human Resources.
- Transition to paperless operations in some departments.
- Proposal to optimize bus routes, particularly focusing on pick-up services for senior clients (approximately 80 seniors).

- City Hall renovations.
- Bus Route Optimization.
- Dune Master Plan is in progress.
- Artificial reef projects are in progress.
- Fire rescue rehabilitation project in progress.
- Public Safety Master Plan will be completed in November 2024.
- Town center construction in progress.
- Discussions regarding building automation system updates in progress.

Feedback

As a crucial part of the workshop process, all participants were encouraged to fill out a feedback survey. This ensured that staff could conveniently communicate strategies and all input was recorded and considered in the development of the sustainability roadmap. Employee feedback was essential for the development process.

The APTIM team and City of Deerfield Beach Sustainability Manager present findings and lead the Sustainability Roadmap Discussion at the Staff Workshop.

Staff members engaging in the workshop breakout sessions, providing feedback and strategy comments on sticky notes to submit to the APTIM team.

Public Input Session

A community input session was hosted to collect public insights and perspectives on the city's sustainability practices and resident goals and to better guide the development and prioritization of the roadmap strategies. During the input session, community members were actively engaged in discussions surrounding the Greenhouse Gas (GHG) Inventory and Sustainability Roadmap. Presentations were made to provide insights into the current environmental impact of municipal operations, as well as proposed strategies and initiatives for enhancing sustainability, particularly in community-focused areas.

Participants had the opportunity to share their perspectives, feedback, and ideas, contributing to a dynamic exchange of insights. Discussions covered a range of topics, including potential challenges, opportunities for collaboration, and areas of priority for sustainability efforts.

Workshop Objectives

The primary objectives of the workshop were multifaceted:

- Present Findings from the Municipal Operations Greenhouse Gas Inventory: The project team shared the results and analysis of the greenhouse gas inventory conducted for municipal operations. Findings provided insights into the current environmental impact of municipal activities.
- Present Sustainability Roadmap with a Focus on the Community Focus Area: The project team introduced the sustainability roadmap outlining key initiatives and strategies, highlighting the community-oriented sustainability efforts and detailing actionable steps and goals for enhancing community sustainability.
- Capture Perspectives and Feedback on the Roadmap: Facilitated discussions occurred to gather input and perspectives from workshop participants on the proposed sustainability roadmap, including strengths, weaknesses, and areas for improvement. These discussions aimed to ensure community voices are heard and considered in shaping the future direction of sustainability efforts.
- Identify Potential Community Partners: Explored opportunities for collaboration and partnership with local organizations, businesses, and community groups. Discussions with attendees laid the groundwork for building a strong network of stakeholders committed to advancing community sustainability goals.

Interactive Engagement

The interactive engagement activities at the input session played a vital role in fostering meaningful dialogue, soliciting diverse perspectives, and empowering community members to actively participate in the sustainability planning process.

- Sharing Green Vision: Attendees were encouraged to articulate their individual visions for a greener and more sustainable community. This activity allowed participants to express their aspirations, values, and priorities related to sustainability. By sharing their green vision,

attendees not only contributed to the collective understanding of community goals but also felt personally invested in the process.

- Mapping Sustainability Features: A city map was provided for attendees to mark specific locations where they would like to see green and sustainability features implemented. This interactive activity allowed participants to visualize and communicate their preferences for the integration of sustainable infrastructure, such as community tree planting, bike lanes, renewable energy installations, and green spaces. Mapping these features helped identify localized opportunities for sustainable development and enhancement.
- Voting on Roadmap Strategies: Attendees were given the opportunity to review and vote on the community-specific strategies outlined in the Sustainability Roadmap. This activity allowed participants to prioritize initiatives based on their perceived importance, feasibility, and potential impact. By engaging in the voting process, community members directly influenced the selection and emphasis of sustainability strategies, ensuring alignment with their values and needs.

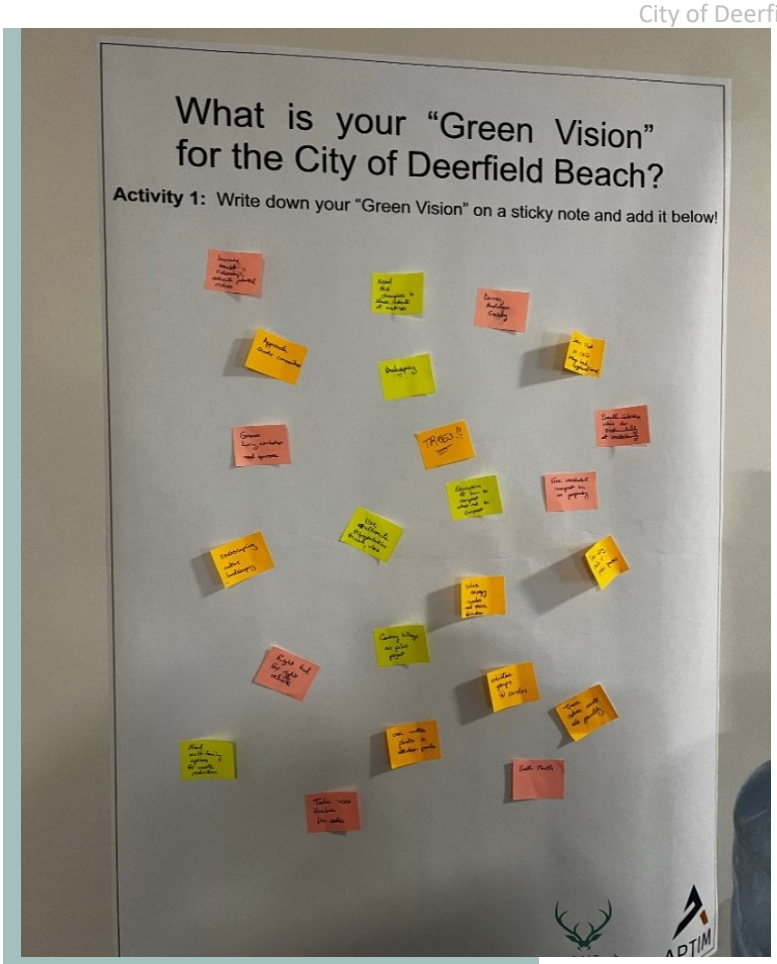
Overall, these interactive engagement activities facilitated dynamic interactions among attendees, promoted inclusivity and collaboration, and generated valuable input for the sustainability planning process. By actively involving community members in shaping the roadmap for sustainable development, the input session laid a strong foundation for collective action and shared ownership of the community's green future.

Key themes and priorities emerging across various discussion topics:

- The urgent need for more trees and shade, especially along roads and at schools.
- Desire for the city to promote sustainable transportation options, including using appropriate fuels for vehicles and increasing bus and bike ridership, especially for city events.
- Support for the city to provide compost bins to all residents, debunk recycling and composting myths, and find solutions for multifamily waste management.
- A strong emphasis on promoting programs, partnerships, and education initiatives, including forming sustainability committees among the public. Various ideas were proposed for promoting compost drop-off and recycling, with potential partnerships with JM Family and education efforts at the Teen Center.

Feedback

After the interactive input session, attendees were invited to fill out a feedback survey to provide their thoughts on various aspects of the session, including their overall experience, the content presented, and the engagement activities. The survey served as a crucial tool for gathering insights, assessing the effectiveness of the session, and identifying areas for improvement.



Residents were prompted to write down their "Green Vision" for the City of Deerfield Beach and stick it to the brainstorming board.

Residents circled locations on an enlarged map of the City of Deerfield Beach of where they would like to see "green" efforts implemented and added sticky-notes detailing what they would like to see.

Best Practices in Sustainability

The City of Deerfield Beach roadmap integrates best practices from plans like the Broward County Climate Action Plan (CAP) and the Southeast Florida Regional Climate Change Compact Regional Climate Action Plan (RCAP), aligning with many of the strategies outlined in these comprehensive documents. The Urban Sustainability Directors Network (USDN)[vi] provides guidance to municipalities for greenhouse gas (GHG) reduction through various channels, toolkits, trainings, and resources. The Aspen Institute[vii], Rocky Mountain Institute[viii], and National Renewable Energy Laboratory[ix] support cities in achieving sustainability and reducing greenhouse gas emissions through policy advocacy, technological innovation, energy efficiency programs, renewable energy integration, and fostering multi-sector collaborations. By drawing inspiration from these established resources and networks, the City of Deerfield Beach roadmap ensures that it incorporates proven approaches and strategies that have been identified as effective in addressing climate change and building resilience.

Many of the best practices and strategies identified in the CAP and RCAP and disseminated by USDN are mirrored in the Deerfield Beach roadmap, reflecting a commitment to adopting sound and evidence-based approaches to sustainability and climate action. These include initiatives such as investing in renewable energy and energy efficiency measures, promoting sustainable transportation options, implementing green building standards, protecting natural habitats, integrating climate considerations into land use planning, and fostering collaboration among stakeholders.

The Broward County Climate Action Plan (CAP) and the Southeast Florida Regional Climate Change Compact Regional Climate Action Plan (RCAP)

The Broward County Climate Action Plan (CAP) and the Southeast Florida Regional Climate Change Compact Regional Climate Action Plan (RCAP) both play integral roles in guiding climate action and resilience efforts across Broward County and the broader Southeast Florida region. These plans provide comprehensive strategies and recommendations for mitigating greenhouse gas emissions, adapting to climate impacts, and enhancing community resilience. The CAP outlines a set of specific actions and initiatives aimed at reducing greenhouse gas emissions across various sectors, including energy, transportation, waste management, and land use. It emphasizes the importance of transitioning to renewable energy sources, improving energy efficiency, promoting sustainable transportation options, and integrating green infrastructure into development projects. Additionally, the CAP highlights the significance of protecting natural resources, enhancing ecosystem resilience, and prioritizing equity and social justice in climate planning and decision-making.

Similarly, the RCAP, developed as part of the Southeast Florida Regional Climate Change Compact, focuses on building resilience to climate impacts such as sea-level rise, flooding, extreme heat, and storm events. The RCAP emphasizes the importance of adaptive capacity-building, infrastructure resilience, and nature-based solutions to enhance community resilience. It also underscores the need for coordinated regional action, stakeholder engagement, and equitable approaches to resilience planning.

Best practices provided in these plans include:

- Investing in renewable energy sources and energy efficiency measures to reduce greenhouse gas emissions.

- Promoting sustainable transportation options such as public transit, walking, and cycling to reduce reliance on fossil fuels.
- Implementing green building standards and incentives to increase energy efficiency and resilience in building design and construction.
- Protecting and restoring natural habitats, including wetlands, mangroves, and coastal dunes, to enhance resilience to climate impacts and provide ecosystem services.
- Integrating climate considerations into land use planning, zoning regulations, and development policies to minimize exposure to climate risks.
- Engaging stakeholders and fostering collaboration among government agencies, community organizations, businesses, and residents to develop and implement climate action and resilience plans.
- Prioritizing equity and social justice in climate resilience efforts, ensuring that vulnerable communities have access to resources, information, and support to adapt to climate change.

Overall, the CAP and RCAP serve as critical guiding documents for climate action and resilience planning in Broward County and Southeast Florida, providing a roadmap for building more sustainable, resilient, and equitable communities in the face of climate change.

The Urban Sustainability Directors Network (USDN)

The Urban Sustainability Directors Network (USDN) provides guidance to municipalities for greenhouse gas (GHG) reduction through various channels and resources. USDN serves as a collaborative platform and resource hub for municipalities seeking to reduce GHG emissions, build resilience to climate change, and create more sustainable and livable communities. Through knowledge sharing, technical assistance, resources, collaboration, and policy advocacy, USDN empowers cities to take meaningful action towards a low-carbon and resilient future and advocates for several strategies that offer a high return on investment (ROI) in the context of sustainability and resilience initiatives. Common strategies highlighted by USDN for maximizing ROI include:

- **Energy Efficiency Retrofits:** Investing in energy efficiency upgrades for buildings, infrastructure, and public facilities can yield significant cost savings by reducing energy consumption and operating expenses.
- **Renewable Energy Deployment:** Transitioning to renewable energy sources such as solar, wind, and geothermal energy can provide long-term cost savings by reducing reliance on fossil fuels and stabilizing energy costs.
- **Sustainable Transportation Investments:** Promoting sustainable transportation options such as public transit, cycling, walking, and electric vehicles can generate multiple benefits, including reduced congestion, improved air quality, and lower transportation costs.
- **Circular Economy Initiatives:** Transitioning to a circular economy model that emphasizes resource efficiency, waste reduction, and material reuse can generate cost savings while minimizing environmental impacts.

The Aspen Institute

The Aspen Institute advocates for strong climate policies at all levels of government, aiming to create a supportive regulatory environment for sustainability efforts. The Aspen Institute supports cities in planning for sustainability and reducing greenhouse gas emissions by advocating for strong climate policies, raising public awareness, funding innovative research, and fostering multi-sector collaborations. The Aspen Institute focuses on advocacy, education, research, and collaboration to promote sustainability and reduce greenhouse gas emissions, and recommends entities do the following:

- **Engage Policymakers:** Actively work with local, state, and federal officials to promote strong climate policies that support emissions reductions and sustainability goals.
- **Develop Evidence-Based Recommendations:** Create policy recommendations based on scientific research and economic analysis to highlight the benefits of sustainability initiatives.
- **Public Awareness and Education:** Organize Public Campaigns: Raise awareness about climate change and sustainability through public campaigns, leveraging social media and traditional media to reach diverse audiences.
- **Host Educational Workshops:** Provide workshops, webinars, and conferences to educate various stakeholders on sustainable practices and climate solutions.
- **Collaborate with Academic Institutions:** Partner with universities to advance climate science and develop innovative sustainability solutions.
- **Create Collaborative Platforms:** Establish forums and platforms for stakeholders from different sectors to collaborate on sustainability initiatives and share best practices.
- **Facilitate Multi-Sector Partnerships:** Encourage partnerships between businesses, government agencies, and nonprofit organizations to leverage resources for sustainability projects.

The Rocky Mountain Institute (RMI)

The Rocky Mountain Institute (RMI) is an independent, nonprofit organization dedicated to transforming global energy use to create a clean, prosperous, and secure low-carbon future. RMI focuses on building decarbonization, transportation electrification, renewable energy, industrial efficiency, and systemic energy use changes. The Rocky Mountain Institute aids cities in achieving sustainability and reducing greenhouse gas emissions through building decarbonization, transportation electrification, renewable energy integration, industrial efficiency improvements, and systemic policy reforms. RMI focuses on practical solutions and systemic changes to drive sustainability and reduce greenhouse gas emissions, which include:

- **Promote Net-Zero Buildings**: Advocate for and provide technical assistance for the construction of net-zero energy buildings that produce as much energy as they consume.
- **Deep Energy Retrofits:** Implement retrofits that drastically reduce energy consumption in existing buildings through improved insulation, windows, and HVAC systems.
- **Develop EV Infrastructure:** Work with cities and utility companies to expand electric vehicle charging infrastructure, making it easier for individuals and businesses to switch to EVs.
- **Incentivize EV Adoption:** Advocate for policies and incentives that encourage the adoption of electric vehicles, such as tax credits and rebates.

- **Facilitate Renewable Projects:** Support the planning and financing of large-scale renewable energy projects, like solar and wind farms.
- **Grid Modernization:** Promote upgrades to the electricity grid to support the integration of renewable energy sources, ensuring stability and efficiency.
- **Optimize Industrial Processes:** Collaborate with industries to enhance the energy efficiency of their operations through process improvements and the adoption of best practices.
- **Implement Clean Technologies**: Support the introduction of clean technologies in industrial settings, such as energy-efficient machinery and waste heat recovery systems.
- **Advocate for Policy Reforms:** Push for comprehensive policy reforms that support sustainable energy practices, including carbon pricing and renewable energy standards.
- **Encourage Behavioral Change:** Promote behavior changes among consumers and businesses to adopt more sustainable energy practices.

The National Renewable Energy Laboratory (NREL)

The National Renewable Energy Laboratory (NREL) and the Department of Energy (DOE) are heavily invested in clean energy research, aiming to innovate and improve renewable energy technologies. They implement nationwide energy efficiency programs to reduce overall energy consumption. Grid modernization is a key focus, ensuring that the electricity infrastructure can support the integration of renewable energy sources. The National Renewable Energy Laboratory helps cities plan for sustainability and reduce greenhouse gas emissions by advancing clean energy research, implementing energy efficiency programs, modernizing the electricity grid, accelerating technology deployment, and providing financial support for innovative projects. Best practices promoted by NREL include:

- **Collaborate with Industry**: Partner with private sector companies to accelerate the commercialization of innovative clean energy technologies.
- **Implement Nationwide Programs:** Develop and implement energy efficiency programs across the country, targeting residential, commercial, and industrial sectors to reduce overall energy consumption.
- **Provide Technical Assistance:** Offer technical assistance and resources to help businesses and households improve their energy efficiency, including audits, training, and best practice guides.
- **Support Smart Grid Technologies**: Promote the adoption of smart grid technologies that enhance the reliability, efficiency, and security of the electricity grid. This includes advanced metering infrastructure, demand response, and distributed energy resources.
- **Integrate Renewable Energy:** Work on projects that facilitate the integration of renewable energy sources into the grid, ensuring that the grid can handle variable energy outputs from sources like solar and wind.
- **Accelerate Deployment**: Accelerate the deployment of clean energy technologies by providing funding, technical support, and market analysis to overcome barriers to adoption.
- **Support Demonstration Projects:** Conduct demonstration projects to showcase the feasibility and benefits of new technologies, helping to build confidence among stakeholders and potential adopters.
- **Provide Financial Support:** Offer grants and financial support for clean energy projects, research initiatives, and pilot programs that drive innovation and deployment.

Summary of Emission Reduction Targets

The strategies outlined in this Roadmap are aligned with three significant emission reduction targets. These targets are aimed at addressing emissions in crucial sectors such as energy, transportation, and waste. They reflect the city's commitment to reducing its carbon footprint and mitigating the impacts of climate change. These emission reduction targets serve as guiding principles for sustainability strategies and are instrumental in driving progress toward more environmentally responsible city operations.

Target 1: Energy-Related Emissions Reduction

Achieve a 50% reduction in emissions from energy use by 2050.

The first emission reduction target focuses on reducing emissions from energy use, aligning with the staff selected Energy Efficiency and Conservation Block Grant (EECBG) Conservation Strategy included in funding request applications. The EECBG program was established by the U.S. Department of Energy (DOE) to assist local governments in implementing energy efficiency and conservation projects. The EECBG program provides funding for projects that aim to reduce energy use and carbon emissions, create jobs, and stimulate economic growth at the local level.

This target will be accomplished through the following:

- A realized 3% reduction in energy consumption from municipal facilities from 2017 to 2022 through efficiency upgrades and operational improvements.
- Building renovations or energy retrofits to achieve additional reductions of 10-30% by identifying inefficiencies and implementing corrective measures.
- Launching an energy conservation campaign aimed at achieving a 5-10% reduction in energy related emissions through employee behavioral changes and awareness programs.
- Implementation of a solar investment plan to increase renewable energy generation, targeting a 20% reduction in emissions through solar energy adoption.

Target 2: Transportation-Related Emissions Reduction

Achieve a 30% reduction in transportation-related emissions by 2050.

The second emission reduction target focuses on reducing emissions from transportation activities, which will be achieved through:

- Transition of municipal fleet vehicles to electric vehicles (EVs) and Compressed Natural Gas (CNG) vehicles and fleet optimization to account for a 20% reduction in transportation-related emissions.
- Implementation of a fleet car sharing program to achieve an emission reduction of 5-10%.
- Launching an education campaign aimed at achieving a 5-10% reduction and at raising awareness about sustainable transportation options, encouraging mode shifts to walking, cycling, and public transit, and promoting EV adoption among employees.

Target 3: Waste-Related Emissions Reduction

Align targets with those of the Broward County Solid Waste and Recyclable Materials Processing Authority to reduce volume of waste landfilled.

The third emission reduction target supports aligning city targets with those of the Broward County Solid Waste and Recyclable Materials Processing Authority, which aim to reduce emissions associated with waste generation and disposal. The Authority is responsible for the implementation of the Solid Waste Master Plan for Broward County and once the plan is established, it is recommended that the city aligns with the goals for reducing waste and increasing recycling. More specifically, greenhouse gas emission reduction targets should be set to align with the regional objectives, focusing on reducing landfill emissions and promoting sustainable waste management practices.

Target 4: Policy Implementation

Achieve a 30% reduction in emissions across focus areas by 2050 as a result of city ordinances, code amendments, and policies.

The fourth emission reduction target for the City of Deerfield Beach aims to achieve substantial emissions reductions by 2050 through policy implementation. This target involves enacting and enforcing a series of policies and regulations aimed at transitioning to renewable energy sources, promoting energy efficiency, enhancing public transportation infrastructure, implementing waste management strategies, and fostering sustainable urban planning practices. The goal is to significantly mitigate greenhouse gas emissions across various sectors to contribute to local and regional climate action efforts.

The fourth emission reduction target will be achieved through implementation of:

- A city-wide recycling policy aimed at achieving a 10% reduction in waste related emissions.
- A Solar Ready Roof Ordinance and a Green Building Ordinance to attain a 10% reduction in energy related emissions.
- Enactment of various amendments to the city's Land Development Code, focused on mandating energy efficiency, solar energy, and green building and multi modal practices, to achieve a 10% emission reduction across energy use and transportation emissions.

Target 5: Public Engagement

Achieve a 15% reduction in emissions across focus areas by 2050 as a result of consistent and active public engagement.

The fifth emission reduction target aims to achieve significant greenhouse gas (GHG) reductions through public engagement initiatives by 2050. This target emphasizes fostering community involvement, raising awareness, and promoting sustainable behaviors among residents. By actively engaging the public in sustainability efforts, the City of Deerfield Beach aims to provide education and resources, and attain buy in, active support, and adherence to sustainable plans plans, strategies and projects. This target will be achieved through effective educational campaigns and communications regarding energy, transportation, and waste related sustainability efforts and resident's taking specific actions as a result of the engagement.

Summary of Actionable Work Plan

The Actionable Work Plan serves as a pivotal component of the City of Deerfield Beach Sustainability Roadmap and Work Plan, offering a tangible framework for translating the collective vision into concrete actions and measurable outcomes. Designed to guide the implementation of sustainability strategies over multiple timeframes, this plan outlines a series of high-priority initiatives organized by recommended timeframe, with flexibility built in to accommodate unforeseen challenges and evolving priorities. The Actionable Work Plan is a strategic blueprint that organizes the strategies presented in the broader sustainability roadmap into actionable steps and practical timelines. It represents a synthesis of community input, technical analysis, and stakeholder engagement efforts, providing a clear pathway for advancing sustainability initiatives and driving meaningful change across various sectors of our city. Inclusion of the Actionable Work Plan within the broader sustainability roadmap is essential for ensuring that the presented strategies are translated into tangible results. By delineating specific actions, milestones, and timeframes, the work plan adds clarity, accountability, and direction to sustainability efforts.

The Actionable Work Plan serves as a recommended framework for implementation by providing a structured approach to prioritizing and sequencing sustainability initiatives. The strategies within each timeframe are organized according to the priority areas outlined in the roadmap and are presented in sequential order. Priority actions are highlighted in yellow to guide implementation. Fiscal Years (FY) 2028 and 2029 are positioned to allow for adaptive response to emerging challenges and the accommodation of strategies requiring extended timelines.

FY 2025 [Year 1]

Strategy Number	Strategy
B-2	Expand engagement with state, regional and utility partners to enhance collaboration on energy efficiency and renewable energy.
B-7	Offer educational resources on energy and water conservation to employees and incentivize behavioral change through convenience.
B-8	Track implementation of municipal sustainability initiatives.
T-4	Offer educational resources and assistance to employees to reduce fossil fuel consumption.
T-3	Conduct employee commute survey and implement Transportation Demand Management (TDM) strategies.
W-4	Organize waste reduction office campaign.
C-5	Promote sustainability initiatives at events and collect data on public interests for sustainability initiatives.

FY 2026 [Year 2]

Strategy Number	Strategy
B-4	Amend Land Development Code to support energy efficiency and solar in housing and new developments.

B-5	Identify opportunities to include solar energy and storage on existing city facilities.
T-1	Replace conventional vehicles with electric, hybrid, or alternative fuel vehicles and phase out older, high-emission vehicles.
W-1	Implement plans and policies to reduce waste volumes.
W-2	Expand the DFB Compost program to include additional city facilities and municipal landscaping material.
C-1	Offer educational resources about energy conservation and solar installation to community members.

FY 2027 [Year 3]

Strategy Number	Strategy
B-1	Use data from Advanced Metering Infrastructure to monitor energy use and optimize operations for energy efficiency.
B-6	Ensure new buildings and renovations to existing buildings meet energy-efficient and sustainability standards.
B-9	Evaluate funded technical assistance opportunities for energy efficiency improvements for water utilities.
T-2	Implement a car-sharing program and consolidate vehicle usage to minimize the number of vehicles in operation.
C-2	Promote city-wide use of electric vehicles and sustainable transportation practices.

FY 2028 [Year 4]

Strategy Number	Strategy
B-3	Implement water conservation measures in municipal operations to decrease the energy required for water supply processes.
T-6	Amend Land Development Code to encourage green building practices in a multi-modal transportation system.
C-3	Increase awareness of waste reduction and water conservation practices.
C-4	Promote native tree planting across the city.

FY 2029 [Year 5]

Strategy Number	Strategy
W-3	Reduce and optimize waste collection and transportation.
T-5	Evaluate feasibility of additional operational uses for Compressed Natural Gas (CNG) and develop conversion program.

Plan Orientation

The roadmap presents a structured approach to advancing City of Deerfield Beach's sustainability objectives through a series of strategies and associated metrics. Organized into four focus areas—Building and Power Supply Sources, Transportation, Waste, and Community—the roadmap delves into each area with an introductory overview, highlighting the significance, GHG inventory insights, and the forthcoming strategies and implementation steps.

Within each focus area, strategies are outlined, delineating primary goals and which city departments need to collaborate for implementation. Key Performance Indicators (KPIs) linked to the city's Comprehensive Plan and Strategic Plan are highlighted to gauge the effectiveness of each strategy, along with potential funding sources and implementation steps. Underpinning each strategy are specific steps and metrics to guide execution. These metrics span various dimensions and include potential GHG reduction, metrics for tracking progress, alignment with city policies and goals, involved departments, estimated cost, and funding strategies. For each strategy, the following characteristics are listed in the roadmap.

- **Potential GHG Reduction |** This metric estimates the anticipated percent decrease in greenhouse gas (GHG) emissions resulting from the implementation of a specific action or initiative within a sustainability strategy within five years of implementation and/or by 2050. This metric helps assess the effectiveness of the proposed actions in achieving emission reduction targets and advancing sustainability goals. Evaluating the GHG reduction potential aids decision-makers in prioritizing actions with the greatest environmental benefits and aligning with climate mitigation objectives. For community strategies, this metric was not included, as a community wide GHG inventory would first need to be conducted to establish emission baselines.

- **Metrics for Tracking Progress |** These metrics measure progress toward sustainability goals and full implementation of strategy. An implemented action would result in positive changes in associated metrics or Key Performance Indicators (KPIs). The impact on metrics provides valuable insights into the effectiveness of sustainability actions, helping the city assess performance, identify areas for improvement, and track progress toward achieving desired outcomes.

- **Alignment with City, County, and Regional Policies and Goals |** This section describes the extent to which the sustainability strategy aligns with the policies, objectives, and goals set forth by the emission reduction targets, 2022 City Comprehensive Plan, 2023 City Strategic Plan, the 2020 Broward County Climate Change Action Plan (CCAP), and the 2022 Southeast Florida Regional Climate Change Compact Regional Climate Action Plan 3.0 (RCAP). Alignment assesses how well the proposed strategies and actions contribute to achieving key sustainability targets and priorities established at the municipal, county, or regional level. Alignment increases efficiency in implementation and focused impact from dedicated resources.

► **Staff or Public Priority Identified in Workshops |** This section identifies strategies that were favorited at either the public input session or staff workshop. During the public input session, community members actively engaged in discussions, providing invaluable insights and perspectives on various sustainability strategies. Their input helped identify priorities that resonate with the community's values and aspirations for a sustainable future. Additionally, the staff workshop allowed for in-depth analysis and evaluation of strategies from a technical and operational standpoint. Through collaborative dialogue and expertise, staff members identified strategies that align with organizational goals, resource availability, and implementation feasibility. By integrating inputs from both public and staff workshops, the plan ensures a holistic approach that addresses community needs while leveraging organizational capacity and expertise for effective implementation.

► **Involved Departments |** This section lists the city departments and stakeholders that will be actively engaged in the implementation and execution of the sustainability strategy. The breadth and depth of departmental involvement ranges from leadership and decision-making roles to operational and implementation responsibilities. By delineating the specific departments involved, this metric provides insights into the interdisciplinary nature of the sustainability efforts and the span of organizational buy-in and support.

► **Estimated Cost |** An estimated projected financial investment is provided for each strategy, where feasible. It encompasses expenses such as labor, materials, equipment, and other relevant costs associated with executing the action. The estimated cost is intended to assist staff and decision-makers understand the financial implications of implementing the proposed actions or for budgetary planning and resource allocation. These estimates should be updated prior to initiating implementation based on actual project scope.

► **Potential Funding Sources |** This section lists potential resources available to support the implementation of the sustainability strategy. Information includes details on any grants, funds, and suggested budget allocations from municipal funds, as well as potential partnerships with external organizations or private sector entities that contribute to the funding of the initiative. Tracking Potential Funding Sources provides transparency and accountability in resource management, ensuring the sustainability efforts have adequate financial backing for successful execution. Descriptions of each grant program including eligible uses, links to official grant websites, and application specifications are included in Appendix A.

Building and Power Supply Sources

The Building and Power Supply Sources Sector stands as a cornerstone within the overarching Sustainability Roadmap for the City of Deerfield Beach. This section is dedicated to charting a course towards sustainability, efficiency, and significant reductions in greenhouse gas emissions. Building and power supply sources encompass the energy consumed within fixed locations, such as municipal buildings, facilities, and infrastructure. Recognizing the critical role of energy consumption in a carbon footprint, this sector is at the forefront of the city's sustainability efforts. The strategies outlined here are designed to optimize energy usage, integrate renewable sources, and enhance the overall efficiency of stationary operations.

The City of Deerfield Beach has made recent progress in energy efficiency through its 2019 Guaranteed Energy, Water, and Wastewater Performance Savings Contract. The 2021-2022 Annual Period 1 Performance Assurance Report outlines the realized outcomes of this collaboration, including Building Automation, Lighting Retrofits, HVAC Replacements, Water Plant Efficiency Upgrades, and the solar installation on Fire Station 102. A significant opportunity for solar implementation exists for both existing facilities and newly built facilities in the future. The City of Deerfield Beach Municipal Operations Greenhouse Gas Inventory confirmed that electricity usage for city operations is a primary contributor to municipal emissions (33% of the emissions inventory in 2022). Furthermore, electricity usage accounted for 97% of Building and Power Supply emissions. Two of the city's Surficial Wells (Well 19 and 22) were among the top ten city facilities with the greatest energy demand. This finding highlights the need for strategic intervention to achieve water conservation, and in turn, energy conservation.

Key strategies include:

B-1: Use data from Advanced Metering Infrastructure to monitor energy use and optimize operations for energy efficiency.

B-2: Expand engagement with state, regional and utility partners to enhance collaboration on energy efficiency and renewable energy.

B-3: Implement water conservation measures in municipal operations to decrease the energy required for water supply processes.

B-4: Amend Land Development Code to support energy efficiency and solar in housing and new developments.

B-5: Identify opportunities to include solar energy and storage on existing city facilities.

B-6: Ensure new buildings and renovations to existing buildings meet energy-efficient and sustainability standards.

B-7: Offer educational resources on energy and water conservation to employees and incentivize behavioral change through convenience.

B-8: Track implementation of municipal sustainability initiatives.

B-9: Evaluate funded technical assistance opportunities for energy efficiency improvements for water utilities.

33% of total emissions originated from building and power supply sources within 2022.

Electricity usage accounted for 97% of building and power supply-related emissions.

In order to ensure alignment with overarching community objectives and leverage existing frameworks for sustainable development, the Sustainability Roadmap incorporates a dedicated section under each focus area outlining pertinent goals and policies derived from the 2022 City Comprehensive Plan, the 2023 Strategic Plan, the 2020 Broward County Climate Change Action Plan (CCAP), and the 2022 Southeast Florida Regional Climate Change Compact Regional Climate Action Plan 3.0 (RCAP)

Related Goals and Policies from the 2022 City Comprehensive Plan

Coastal Element

Post-Disaster Redevelopment Plan, Objective 4.1, Policy 4.1.4 | Utilize resilient construction practices post-disaster to ensure that structures are rebuilt to code, and reconstruction projects incorporate hazard mitigation measures, energy efficiency and green building opportunities. Assess nonconformities and where optimum, reconstruct to the current building code and land development regulations.

Utilities Element

Objective UT 4.2- Policy 4.2.3 | Minimize per capita increases in potable water demands, retrofit existing infrastructure, evaluate the costs and benefits of adaption alternatives when implementing policies for the increased efficiency and capacity of existing facilities.

Objective UT 4.4- Policies 4.4.3- 4.4.6 | Conserve potable water by optimizing the utilization of water through effective water management practices. Enforce Chapter 46, "Plumbing," Section 46-14.13, Table 46 R2 The South Florida Building Code, Broward Edition, which contains standards for ultra-low volume plumbing fixtures to be used in all new construction. Implement a leak detection program to reduce the amount of unaccounted-for water loss within its system. The City shall implement a year-round public information and education program promoting water conservation. Study and develop a program to further promote conservation of water resources in concert with its C.U.P. and the 2018 LECWSP Update requirements.

Capital Improvements Element

Objective CIE 1.1- Policy 1.1.3 | Capital improvement proposed projects should be reviewed, and recommendations should be made based on various criteria, including the project's ability to increase efficiency of use of existing facilities, preventing or reducing future improvement costs.

Intergovernmental Coordination Element

Objective IC 1.6 | The city shall strive to make sustainability and climate resiliency efforts more impactful through coordination and cooperation with appropriate agencies, and through consideration during the planning process.

Climate Resiliency Element

Objective 1- Policies 1.1, 1.2, 1.8, and 1.12| Adopt strategies and sustainable initiatives that include energy efficiency and renewable energy, sustainable land use practices and policy development. Adopt Land Development Code amendments that support energy efficiency, GHG reduction and conservation; continue energy use monitoring and baseline management for city government activities and operations; enhancements to the built environment including green

building policies and matters that support the reduction of GHGs; encourage sustainable building practices such as energy and water efficiency, green infrastructure, solar energy, and reduce pollution and urban heat island; continue to update the Land Development Code to encourage sustainable initiatives and reduce GHG emissions of both its government operations and the community at large.

Objective 3- Policies 3.1-3.5, 3.12 | Implement policies and strategies that enhance and support the natural environment and continue to support energy and water conservation. Develop and refine greenhouse gas (GHGs) policies and procedures; develop initiatives that help reduce greenhouse gases within the community through development of sustainable policies and procedures; expand the green building (LEED or similar programs) standards for public and private development within the city. Continue to support and implement water conservation measures throughout the city. Install low-flow water conserving fixtures and energy saving features throughout City facilities.

Objective 4- Policies 4.3-4.5 | Expand engagement with the community and state, regional and other government partners to enhance communication and collaboration. Educate by outreach to the community through print, social media and other available avenues, provide educational and outreach materials to the public; schools; senior and community centers.

Planned Resiliency, Mitigation & Adaptation Activities | Automated Meter Reading / Automated Metering Infrastructure; Sustainability Steering Committee formation – city staff, residents and businesses; NatureScape Live Cameras; Sustainability, Climate, and Resiliency Action Plan development; adoption of additional County and regional climate change and resiliency plans.

Conservation Element

Objective CON 1.6- Policy 1.6.2 | Continue and expand water conservation practices to maintain a low per capita consumption of potable water. Continue to implement a City water conservation-based rate structure; adopt additional water restricting ordinances, implement and enforce environmentally sound landscaping practices, expand the City's water leak utility detection program and the water distribution system leakage programs; implement a public information/education program targeting residential water conservation.

Related Strategies from the 2023 City Strategic Plan

Sustainability and Eco-Friendly Environment

Strategic Objective: Greening city operations.

Modernization of City Processes and Infrastructure

Essential Projects: Update of Comprehensive Plan, Update of Land Development Code, Automatic Metering Infrastructure (AMI), and public private partnerships for infrastructure and facility projects.

Related Strategies from the 2020 Broward County Climate Change Action Plan (CCAP)

Energy Resources Element, Actions 91-95 | Continue to reduce energy consumption, explore options for electrification of fossil-fuel equipment. Require large buildings to benchmark and report their energy performance. Increase solar deployment and use renewable energy. Pursue stronger energy conservation and renewable energy standards in the Florida Building Code. Propose and support stronger energy code standards.

Water Resources Element, Actions 107 and 111| Continue the coordination and delivery of local water conservation programs and activities. Actively promote the "one water" concept. Monitor and protect wellfields.

Related Strategies from the 2022 Regional Climate Action Plan 3.0 (RCAP)

Energy Goal, EN-2 and EN-4 | Advance energy efficiency and conservation, support and advocate for the Florida Public Service Commission (PSC) for increased energy savings through utility-sponsored energy efficiency programs. Advocate for the Florida Building Commission to make changes to promote efficiency, renewable energy and electrification, partner with local government and other stakeholders to assess the efficiency of the Florida Energy Code and define the responsibilities of each trade to improve compliance and enforcement, as well as any key synergies or alignment potential with the Florida Building Code. Expand use of renewable energy.

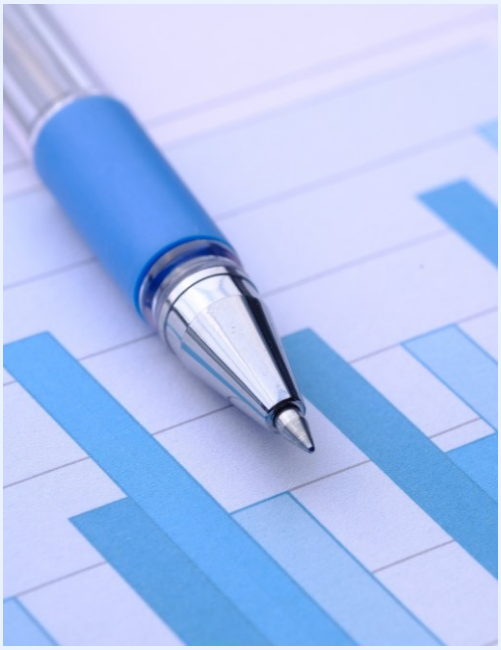
Sustainable Communities and Transportation Goal, ST-9 | Adopt green building standards.

B-1 Use data from Advanced Metering Infrastructure and building automation to monitor energy use and optimize operations for energy efficiency.

Data from Advanced Metering Infrastructure (AMI) and building automation can be used to monitor energy consumption and enhance operational efficiency within the city. The City of Deerfield Beach's AMI provides water usage data in real-time and detects leaks or issues immediately, leading to a faster response time and increased customer satisfaction. The City of Deerfield Beach's building automation system upgrade connected several buildings and HVAC units to a central building automation system, allow the city to track unit runtimes and energy consumption. By leveraging AMI and building automation data analyses, the city can identify patterns, trends, and anomalies in energy consumption, allowing for proactive management and optimization of energy usage. This strategy empowers the city to make data-driven decisions to reduce energy waste, improve system reliability, and lower operational costs.

Implementation Steps:

1. **Conduct a thorough assessment of the existing AMI and building automation systems** to understand their capabilities, limitations, and integration potential.
2. **Develop a plan to integrate data** from the AMI and building automation systems. This may involve implementing software solutions or data management platforms capable of aggregating and analyzing data from multiple sources.
3. **Establish protocols for collecting, processing, and analyzing data** from the AMI and building automation systems. This may involve setting up automated data collection processes and implementing algorithms or analytics tools to identify patterns and anomalies in energy use.
4. **Develop energy optimization strategies** based on insights gained from data analysis. These strategies may include adjusting building HVAC systems, lighting schedules, and equipment operations to minimize energy consumption during peak demand periods and optimize overall efficiency.
5. **Implement automated control systems** that can adjust energy usage in real-time based on predefined parameters and optimization goals. This may involve programming building



management systems to respond dynamically to changes in occupancy, weather conditions, and other factors affecting energy demand.

6. **Continuously monitor energy usage and performance metrics** to assess the effectiveness of optimization strategies. Use feedback from monitoring systems to fine-tune operations and identify opportunities for further improvement.

Potential GHG Reduction: 20-30% reduction in Energy-related emissions by 2050.

Metrics for Tracking Progress:
Energy consumption reduction.
Peak demand reduction.
Energy efficiency improvements.
Cost savings.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 1

Comprehensive Plan:

- Climate Resiliency Element- Objective 1- Policies 1.1, 1.2, 1.8 and 1.12
- Climate Resiliency Element- Objective 3- Policies 3.1-3.5

Strategic Plan:
Sustainability and Eco-Friendly Environment Strategic Objectives: Greening city operations, Modernization of City Processes and Infrastructure, Essential Projects: Automatic Metering Infrastructure (AMI).

Broward County Climate Change Action Plan (CCAP): Energy Resources Goal, Actions 91-95

Regional Climate Action Plan 3.0 (RCAP): Energy Goal, EN-2 and EN-4

Staff or Public Priority Identified in Workshops: Staff priority.

Involved Departments: Sustainable Management, Environmental Services, City Manager's Office, Information Technology.

Estimated Cost: No additional capital cost, staff time required for implementation. The initial setup phase is resource-intensive, requiring several weeks of dedicated work from IT and engineering staff. Ongoing operations will need a part-time commitment of roughly 15 hours per week to effectively monitor data, optimize operations, and maintain the systems.

B-2: Expand engagement with state, regional and utility partners to enhance collaboration on energy efficiency and renewable energy.

This strategy involves engaging with various entities to exchange knowledge, resources, and best practices, thereby amplifying the impact of sustainability initiatives across various levels of governance and utility services. Through enhanced collaboration, the city can leverage collective expertise and resources and promote sustainable change across various scales to accelerate progress towards its energy efficiency and renewable energy goals.

Implementation Steps:

1. **Evaluate benefits FPL Solar Together Program.**
    a. Assess FPL SolarTogether program, including its objectives, eligibility criteria, subscription options, benefits, and potential impact on the city's electricity consumption.
        i. Fixed subscription rate: $6.76 per kW subscribed
        ii. 180 energy hours generated per month
            1. FPL estimates the highest amount of solar generation at 180 hours per month; these hours are multiplied by the kW subscription level.
        iii. $0.036 credit rate year one (increases yearly)
2. **Participate in planning for regional energy rebate programming** as part of Carbon Pollution Reduction Grants Program funding application with Southeast Florida Regional Climate Change Compact.
    a. Coordinate with City of Fort Lauderdale.
    b. Assess potential benefit of program.
    c. Communicate resource needs.
3. **Align with recommendations of the 2022 Southeast Florida Regional Climate Change Compact Energy Efficiency Action Plan**
    a. *Increase Access to Energy Efficiency Programs:* The plan highlights the need to improve access to energy efficiency programs, especially for low-to-moderate-income (LMI) households. This includes creating a community resource center to catalog and streamline access to existing energy efficiency and assistance programs.

b. *Enhance State and Federal Advocacy:* Advocacy for improvements in state and federal policies. The plan encourages local governments to push for policies that support safe, affordable energy and greater efficiency measures.
c. *Utilize Federal Funding Opportunities*: The plan suggests exploring federal funding and incentives to support the implementation of energy efficiency measures, particularly those targeting vulnerable communities.

4. **Support and advocate to the Florida Public Service Commission (PSC) for increased energy savings** through utility-sponsored energy efficiency programs. **Advocate for amendments within the Florida Building Commission** aimed at advancing efficiency, renewable energy integration, and electrification.

Potential GHG Reduction: 10% reduction in Energy-related emissions by 2050.*

*Assumes offset of 1% of municipal operations annual electricity use which would require an 83 kW subscription ($561/ month)**.** This percentage offset could be increased to 100% based on the discretion of the City.

Metrics for Tracking Progress:
Subscription rate.
Solar capacity added through program.
Electricity offset.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 1

Comprehensive Plan:

- Intergovernmental Coordination Element, Objective IC 1.6
- Climate Resiliency Element- Objective 1- Policies 1.1, 1.2, 1.8 and 1.12
- Climate Resiliency Element- Objective 3- Policies 3.1-3.5
- Capital Improvements Element, Objective CIE 1.1- Policy 1.1.3

Strategic Plan:
Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
Modernization of City Processes and Infrastructure Essential Project: Public private partnerships for infrastructure and facility projects.

Broward County Climate Change Action Plan (CCAP): Energy Resources Goal, Actions 91-95.

Regional Climate Action Plan 3.0 (RCAP): Energy Goal, EN-2 and EN-4.

Involved Departments: Sustainable Management, Environmental Services, Finance and Budget, Purchasing.

Estimated Cost: $6,732 for first year of FPL Solar Together Program subscription. Each year the credit rate increases, resulting in an annual decrease in cost. These extra credits reduce the energy bill and lower the monthly payment.

Potential Funding Sources:
Carbon Pollution Reduction Grants Program funding application with Southeast Florida Regional Climate Change Compact

B-3: Implement water conservation measures in municipal operations to decrease the energy required for water supply processes.

Strategy B-3 focuses on optimizing water usage to reduce the energy demand associated with water supply processes. By implementing water conservation measures, such as efficient irrigation practices, leak detection and repair, and the installation of water-saving fixtures, the city can decrease the overall volume of water pumped and treated, consequently reducing the energy required for these processes.

The strategy is informed by the findings of the greenhouse gas (GHG) inventory, which identified wells as high energy demand components within the water supply system. By conserving water, the City of Deerfield Beach not only mitigates water scarcity and promotes sustainability but also directly addresses the energy-intensive nature of water extraction, treatment, and distribution.

Implementation Steps:

1. **Begin by conducting a comprehensive assessment of existing water fixtures and appliances across City facilities**. Identify areas where water retrofits are needed and prioritize locations based on water usage data, age of fixtures, and potential for water savings. The following lists describe retrofits already in place, the focus for future investment should be in other facilities or areas that have not been retrofitted.
    a. According to the 2021- 2022 Annual Period 1 Performance Assurance Report, the City of Deerfield Beach installed 261 fixtures across 10 locations consisting of 63 restroom sink upgrades, 20 toilet upgrades, 24 shower retrofits, 17 urinals, 15 general purpose faucets and 2 ice machines. In addition to water savings, there was a reduction in electrical energy usage resulting from reduced heated water usage.
    b. Retrofit locations included Oveta Gym, Pioneer Park Tennis-Cemetery, Pier Main and Bait Shop, Highland Park Center, Teen Center, Fire Station 66, Constitution Park, Central City Campus Buildings A and B, and Fire Station 102.
2. **Procure and install low-flow water conserving fixtures**, such as toilets, faucets, and showerheads, throughout city facilities.

Ensure that the selected fixtures meet water efficiency standards and are suitable for the specific usage requirements of each facility.

3. **Maintain a detailed record of locations where water retrofits are completed**, including the type of fixtures installed and the associated water savings achieved. This information will serve as a valuable reference for tracking progress and evaluating the impact of the retrofit program.
4. **Collaborate with NatureScape to conduct irrigation audits of city parks and medians**. Assess the efficiency of existing irrigation systems, identify areas of water waste or inefficiency, and recommend improvements to optimize water usage and minimize runoff.
    a. Implement recommendations from the irrigation audits, such as adjusting irrigation schedules, repairing leaks or malfunctions, and retrofitting irrigation systems with water-saving technologies like smart controllers or drip irrigation.
    b. Reference the 2019 Guaranteed Energy, Water, and Wastewater Performance Savings Contract[x] for baseline irrigation consumption measures.
5. In conjunction with water retrofits, **identify opportunities to install energy-saving features** that complement water conservation efforts.
6. **Establish a system for monitoring water usage and energy consumption in city facilities post-retrofit**. Use metering data and utility bills to track changes in water and energy usage over time and compare performance against pre-retrofit baseline metrics.
7. **Regularly review the results of irrigation audits and track improvements in water efficiency in city parks and medians**. Document any additional water savings achieved through optimization measures implemented as part of the audit recommendations.

Potential GHG Reduction: 3.5% reduction in Energy-related emissions by 2050.*
*Based on realized annual reduction from the 2021- 2022 Annual Period 1 Performance Assurance Report.

Metrics for Tracking Progress:
Water consumption reduction.
Reduction in energy consumption related to water supply processes.
Number of water fixtures upgraded.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 1

Comprehensive Plan:

- Climate Resiliency Element- Objective 3- Policies 3.1-3.5, 3.12
- Conservation Element Objective CON 1.6- Policy 1.6.2
- Utilities Element Objective UT 4.2- Policy 4.2.3, Objective UT 4.4- Policies 4.4.3- 4.4.6

Strategic Plan: Sustainability and Eco-Friendly Environment, Strategic Objective: Greening city operations.

Broward County Climate Change Action Plan (CCAP): Water Resources Element, Actions 107 and 111

Involved Departments: Environmental Services, Sustainable Management, Parks and Recreation.

Estimated Cost: Varies based on number of fixtures, retrofits, repairs, and sites including in audit. Low-flow water conserving fixtures vary in cost, averaging at $50-$100 per fixture. Monitoring, tracking, and collaboration components can be completed by existing employees.

B-4: Amend Land Development Code to support energy efficiency and solar in housing and new developments.

Strategy B-4 involves updating the City of Deerfield Beach's Land Development Code to prioritize energy efficiency and encourage the use of solar energy in new buildings and developments. This entails setting minimum standards for energy-efficient features like lighting and water heaters and promoting the installation of solar panels. The City of Deerfield Beach could consider requiring developers to assess how their projects will impact energy use and infrastructure and could test new energy-efficient lighting through pilot programs.

Implementation Steps:

1. **Conduct a comprehensive review of the existing Land Development Code** to identify areas where amendments can enhance energy efficiency standards and facilitate solar technology integration.
2. **Draft proposed amendments:**
    a. Establish minimum energy efficiency standards for new construction and renovations, including requirements for insulation, HVAC systems, windows, and doors.
    b. Introduce provisions for solar-ready building designs, such as pre-wiring for solar panels and orientation guidelines for optimal solar access.
    c. Implement expedited permitting processes and fee waivers for solar installations to incentivize adoption.
    d. Amend zoning regulations to protect solar access rights, ensuring that buildings are designed and positioned to maximize sunlight exposure for solar energy generation. This may include setbacks, height restrictions, and shading regulations to prevent adjacent structures from blocking sunlight.
3. **Consider requiring developers to assess impacts of increased energy consumption** (new power plant, rate increase).

Potential GHG Reduction: 10-30% reduction in Energy-related emissions by 2050.

Metrics for Tracking Progress:
Solar installation rate.
Energy efficiency compliance.
Permitting efficiency.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 4

Comprehensive Plan:

- Intergovernmental Coordination Element, Objective IC 1.6
- Climate Resiliency Element- Objective 1- Policies 1.1, 1.2, 1.8 and 1.12
- Capital Improvements Element, Objective CIE 1.1- Policy 1.1.3

Strategic Plan:
Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
Modernization of City Processes and Infrastructure Essential Project: Update of Land Development Code, and public private partnerships for infrastructure and facility projects.

Broward County Climate Change Action Plan (CCAP): Energy Resources Element, Action 91.

Regional Climate Action Plan 3.0 (RCAP): Energy Goal, EN-2 and EN-4.

Involved Departments: Sustainable Management, Environmental Services, Planning and Development Services, Code Enforcement, City Commission, City Manager's Office

Estimated Cost: Staff time for implementation.

B-5 Identify opportunities to include solar energy on existing city facilities.

As part of the city's commitment to sustainable development and environmental stewardship, the sustainability roadmap includes a strategic initiative to assess city properties for the potential installation of solar photovoltaic (PV) systems. By harnessing the power of solar energy, the city aims to transition towards cleaner and more sustainable energy sources, thereby reducing the city's carbon footprint and promoting a resilient and energy-efficient infrastructure.

This strategy entails a systematic approach to solar integration across city-owned properties, involving a thorough review of available rooftops and the subsequent creation of Solar Implementation Steps. Additionally, adopting solar-ready policies and incorporating solar considerations into asset management and construction projects ensure that future developments are designed with sustainability in mind from the outset.

Implementation Steps:

1. **Review the inventory** of city-owned buildings to identify suitable rooftops for solar installations.
    a. Consider factors such as age, condition, replacement schedule, available rooftop space, sun exposure, structural integrity, and energy demand.
2. **Utilize the National Renewable Energy Laboratory (NREL) – Renewable Energy Integration & Optimization (REopt) tool**
    a. Screen most suitable facilities identified in the building inventory to identify and prioritize cost-effective solar installations.
    b. Data needed for system size and cost estimation includes facility addresses, electricity rates, and typical electricity loads.
3. **Create a Solar Implementation Plan** to outline a phased approach to solar installation projects.
    a. Replace existing solar panels at the Central City Campus-Building A by 2029.
    b. Consider solar installation at buildings with high energy demand such as City Hall, Fire Station 4, Public Works Department, and Environmental Services.
    c. Consider installation on one facility every three years after 2029.

4. **Determine funding need for solar projects**
    a. Apply for grants for solar panels on city hall, fire station, and other essential buildings.
    b. Determine cost share and dedicate annual funds within the budget to support solar projects, including installation costs, equipment purchases, and maintenance expenses- $100,000-$500,000 annually to support projects that receive grant awards or advance solar projects where feasible.

Potential GHG Reduction: 15% reduction in Energy-related emissions by 2050. *
*Varies based on facility location and if total energy consumption is offset by solar installation.

Metrics for Tracking Progress:
Megawatt (MW) of Solar Photovoltaics Installed.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 1

Comprehensive Plan:

- Objective CIE 1.1- Policy 1.1.3
- Climate Resiliency Element, Objective 1- Policies 1.1, 1.2, 1.8 and 1.12
- Climate Resiliency Element, Objective 3- Policies 3.1-3.4

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.

Broward County Climate Change Action Plan: Energy Resources Element, Actions 91-94.

Regional Climate Action Plan 3.0: Energy Goal, EN-4.

Staff or Public Priority Identified in Workshops: Staff priority.

Involved Departments: Parks and Recreation, Sustainable Management, Environmental Services, Finance and Budget, Purchasing.

Estimated Cost: $100,000-$500,000 per installation*

*This cost estimate is for an entire solar installation and assumes a standard solar module size of around 300 watts (0.3 kW) per panel. The cost per watt for solar installations can range from $1 to $2, with variations based on specific project factors. Size and cost will vary based on facility chosen and yearly electricity use. The true cost depends on the system size (kW), roof size and orientation, roof condition and complexity, type of solar panels, equipment, labor, and permitting.

Potential Funding Sources:

- Environmental and Climate Justice Community Change Grants Program
- National Clean Investment Fund | US EPA
- Community Development Block Grant
- Investment Tax Credit (ITC) for Renewables -- Tax-exempt entities are eligible.
- Production Tax Credit (PTC) for Electricity from Renewables -- Tax-exempt entities are eligible.
- Thriving Communities Grantmaking Program (EJ TCGM) Program
- Communities Sparking Investment in Transformative Energy (C-SITE) - grant within Local Government Energy Grant Program (LGEP)

B-6 Ensure new buildings and renovations to existing buildings meet energy-efficient and sustainability standards.

The outlined strategy proposes a proactive approach to urban development by advocating for adherence to energy-efficient and sustainability standards in all new constructions and renovations of existing buildings within the city. By emphasizing the integration of eco-friendly practices and technologies into building designs, this initiative aims to minimize environmental impact and enhance energy efficiency.

Establishing guidelines for solar-ready roofs will make it easier to integrate solar energy systems into new and existing buildings, while developing a Green Building Ordinance ensures that new construction meets strict energy conservation standards. Regular audits and retro-commissioning of large government buildings help identify areas for improvement in energy efficiency and sustainability, leading to long-term environmental benefits.

Implementation Steps:

1. **Set green building standard for new public buildings.**
2. **List priority energy efficiency and solar projects to be prioritized post-disaster.**
    a. Update list annually. Note which projects could be funded with disaster funding.
3. **Add question to capital improvement budgeting process to encourage planning for energy efficiency**.
    a. As an example, what would the cost of adding energy efficiency measures to this project be? Are there any no cost energy efficiency measures that could be implemented with the project?
4. **Implement a Solar-Ready Roof Ordinance** for roof construction on existing or new facilities.
    a. Develop guidelines and standards for incorporating solar energy systems into new construction, considering factors such as building orientation, roof design, and energy demand. Reference the National renewable Energy Laboratory (NREL) Solar Ready Building Planning Guide.
    b. Incorporate solar considerations into the asset management plan, prioritizing solar installations during roof replacement or refurbishment projects.

5. **Develop and implement a Green Building Ordinance** compliant with the "Florida Energy Conservation Code" portion of the Florida Building Code (FBC).
6. **Audit, benchmark, and/or retro-commission large existing government buildings every 10 years**.
7. **Update energy efficiency practices to better accommodate employees needs, work schedules, and demand.**
    a. Implement timely motion sensors.
    b. Decentralize air conditioning control.

Potential GHG Reduction: 10-30% reduction in Energy-related emissions by 2050. *

*Dependent on amount of general construction, roof construction, and retrofitting implemented. The City of Deerfield Beach reduced its annual emissions by 757 MT CO2e during the 2021- 2022 Annual Period 1 Performance Assurance Report.

Metrics for Tracking Progress:
Number and efficiency of energy efficiency upgrades.
Megawatt-hours (MWh) electricity consumption reduced.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 1 and Target 4

Comprehensive Plan:

- Climate Resiliency Element, Objective 1- Policies 1.1, 1.2, 1.8 and 1.12
- Climate Resiliency Element, Objective 3- Policies 3.1-3.4

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.

Regional Climate Action Plan 3.0: Energy Goal, EN-2.6.

Involved Departments: Sustainable Management, Environmental Services, Planning and Development Services, City Commission, City Manager's Office.

Estimated Cost: No additional cost under existing Performance Savings Agreement (Contract).

B-7 Offer educational resources on water and energy conservation to employees and incentivize behavioral change through convenience.

The goal of Strategy B-6 is to empower employees with knowledge and resources to actively participate in energy and water conservation efforts and explore sustainable energy options. By providing comprehensive information on energy conservation practices, employees can gain a deeper understanding of the significance of reducing energy consumption and adopting sustainable energy solutions. Educating employees about the importance of energy reduction habits at work not only contributes to environmental conservation but also leads to cost savings for the organization. Resources will also focus on water use reduction and conservation practices for employees to implement at the workplace and at home. Through personalized guidance and assistance, employees can implement energy-efficient and water conservation practices and explore solar options tailored to their specific needs. Assistance may include personalized guidance, consultations, and support to help employees navigate the process of implementing water conservation and energy-efficient practices or integrating solar technologies.

Implementation Steps:

1. **Electronic informational resource development.**
    a. Energy conservation
        i. Compile informative guides, fact sheets, infographics, videos, and webinars that cover various aspects of energy use reduction, efficiency, and solar energy.
        ii. Organize the collected resources into categories such as energy-saving tips, renewable energy technologies, and funding resources to facilitate easy navigation.
    b. Water conservation
        i. Leverage federal and county resources for water conservation including Broward County Water Conservation[xi], Water Conservation Cheat Sheet for the Workplace | Emirates Nature-WWF Team[xii], Best Management Practice #4: Water-Efficient Landscaping | Energy.gov[xiii], and Best Management Practices for Water Efficiency | Energy.gov[xiv]

2. **Create a "resource hub" on the city website.**
    a. Develop a centralized online platform accessible to all employees where educational resources are available.
    b. Populate the resource hub with informative guides, brochures, videos, articles, and other relevant materials to facilitate learning and awareness.
    c. Ensure the resource hub is user-friendly, easily navigable, and regularly updated with updated content to maintain employee engagement.
    d. Align hub with the hubs from T-4 and W-4.
3. **Coordinate quarterly free training/workshops** to educate employees on various aspects of sustainability, energy and water conservation, and renewable energy.
    a. Collaborate with internal experts, external consultants, or sustainability organizations to deliver informative presentations, demonstrations, or interactive activities.
4. **Identify department sustainability champions to advance sustainability strategies**
    a. Appoint sustainability champions from each department who are willing to promote sustainability initiatives.
    b. Coordinate monthly sustainability champion meetings to discuss interdepartmental coordination on sustainability topics and efforts and to equip champions with the knowledge and tools needed to effectively advocate for sustainable practices.
    c. Task sustainability champions with disseminating information from the resource hub (as well as hubs from T-4 and W-3), organizing department-specific sustainability activities, and encouraging their colleagues to participate in sustainability efforts.
5. **Improve operations of energy efficiency equipment based on employee feedback to iteratively improve performance of investments**
    a. Regularly collect staff feedback after energy efficiency improvements are made to ensure optimal functioning of equipment. Change settings to work with staff needs e.g. automatic bathroom lights should stay on while room is occupied, building temperatures should be tolerable, automatic lights turned on for a temporary need should be programmed to return to off when building is empty.

Potential GHG Reduction: 5-10% by 2050

Metrics for Tracking Progress:
Participation and engagement rate.
Pre- and post-training assessments or surveys.
Behavior changes and sustainable practices implemented.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 1

Comprehensive Plan:

- Climate Resiliency Element, Objective 1- Policies 1.1, 1.2, 1.8 and 1.12
- Climate Resiliency Element, Objective 3- Policies 3.1-3.4
- Intergovernmental Coordination Element, Objective IC 1.6

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.

Broward County Climate Change Action Plan:

- Energy Resources Element Actions 91-94.
- Water Resources Element, Action 107.

Regional Climate Action Plan 3.0: Energy Goal, EN-2 and EN-4.

Staff or Public Priority Identified in Workshops: Staff priority.

Involved Departments: All departments.

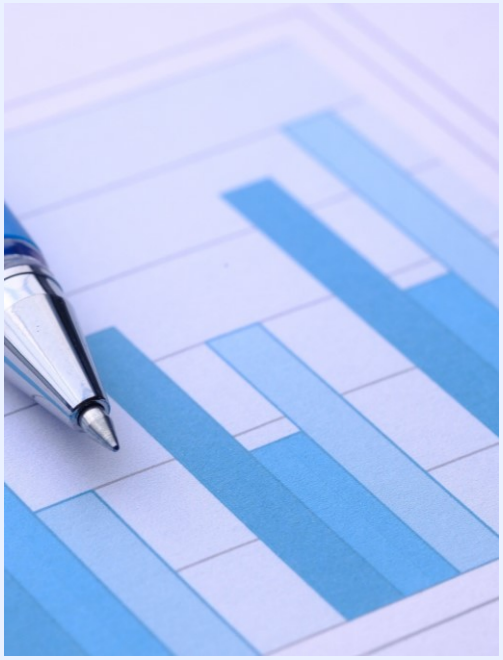
Estimated Cost: Staff time to implement and for champoins and approximately 10 hours annual per department team for trainings.

B-8 Track implementation of municipal sustainability initiatives.

This strategy involves aligning the City of Deerfield Beach's activities with the criteria set forth in sustainable programs in which the city participates. This entails a comprehensive review of program requirements, focusing on **Energy Efficiency and Conservation Block Grant** (EECBG) reporting, to assess the congruence with current and proposed city actions. Identified gaps are addressed through targeted initiatives focusing on data collection and operational adjustments. Ongoing monitoring and stakeholder engagement are integral to ensure progress and adherence to program standards, thereby demonstrating the City of Deerfield Beach's commitment to sustainability and its contribution to broader environmental objectives.

Implementation Steps:

1. **Review reporting goals and metrics for the Energy Efficiency and Conservation Block Grant (EECBG)(application submitted in April 2024 for $141,090).**
2. **Assess current sustainability strategies** and initiatives to identify areas that align with EECBG reporting goals and metrics.
    a. Achieve a 50% reduction in emissions from energy use by 2050;
    b. Community-wide baseline greenhouse gas inventory;
    c. Fuel efficiency and conservation strategy;
    d. Municipal fleet analysis and right-sizing;
    e. Alternative fuels plan to include electric, CNG, propane, etc.;
    f. Policy and ordinance development and implementation; and, electric vehicle charging infrastructure.
3. **Prioritize actions that contribute directly to meeting the specified targets** and objectives outlined in the EECBG application.
4. **Modify future sustainability strategies as needed** or develop new ones to ensure alignment with reporting goals and metrics.
5. **Documentation and compliance.**
    a. Maintain thorough documentation of all activities, data, and reports related to the alignment of sustainability strategies with EECBG reporting goals.
    b. Ensure compliance with all relevant regulations, guidelines, and deadlines set forth by the EECBG program.



Potential GHG Reduction: 50% reduction in emissions (3,582 MT CO2e) from energy use by 2050.

Metrics for Tracking Progress:
Community-wide baseline greenhouse gas inventory.
Fuel efficiency and conservation strategy.
Municipal fleet analysis and right-sizing.
Alternative fuels plan to include electric, CNG, propane, etc.
Policy and ordinance development and implementation.
Electric vehicle charging infrastructure.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 1

Comprehensive Plan:

- Climate Resiliency Element, Objective 1- Policies 1.1, 1.2, 1.8 and 1.12
- Climate Resiliency Element, Objective 3- Policies 3.1-3.4

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.

Involved Departments: Sustainable Management, Procurement, City Manger's Office.

Estimated Cost: Staff time for implementation.

B-9 Evaluate funded technical assistance opportunities for energy efficiency improvements for water utilities.

By leveraging available resources and expertise, this initiative seeks to identify and capitalize on opportunities for optimizing energy usage and reducing operational costs across water infrastructure systems. Through careful assessment and analysis, potential funding sources, such as government grants, utility incentives, and collaborative partnerships, should be explored to support the implementation of energy-efficient technologies and practices within water utilities. Additionally, this strategy involves evaluating the feasibility and efficacy of various energy-saving measures, including equipment upgrades, process improvements, and innovative technologies. As a critical component of the water utility infrastructure, the West Water Treatment Plant represents a significant source of energy consumption due to the various processes involved in treating and distributing water to the community. Therefore, directing attention towards optimizing energy usage at this facility can yield substantial benefits in terms of cost savings, resource conservation, and environmental sustainability.

Implementation Steps:

1. **Research and identify existing technical assistance programs, grants, and incentives** available at the local, state, and federal levels that specifically target energy efficiency improvements for water utilities. Potential federal programs to research include:
    a. **U.S. Environmental Protection Agency (EPA) WaterSense Program:** Offers technical assistance and resources to help water utilities identify and implement water-saving measures, including energy-efficient technologies and practices.
    b. **Department of Energy (DOE) Better Buildings Initiative:** Offers technical assistance, tools, and resources to support energy efficiency improvements in commercial and industrial facilities, including water treatment plants.
    c. **Water Research Foundation (WRF) Energy Management Program:** Provides technical assistance and research findings to help water utilities optimize energy use and reduce energy costs. It offers resources such as energy management guides, case studies, and training workshops focused on energy efficiency strategies for water treatment plants.

   d. **American Water Works Association (AWWA) Energy Efficiency Programs:** Offers technical assistance and educational resources to help water utilities enhance energy efficiency in water treatment and distribution systems.
   e. **Utility Energy Service Contracts (UESC):** UESC programs, offered through federal agencies such as the Department of Energy and the Department of Defense, provide technical assistance and financing options for implementing energy efficiency projects in water treatment plants. These programs offer comprehensive energy services, including energy audits, project design, installation, and performance monitoring.
2. **Evaluate the eligibility criteria, application process, funding availability, and technical support offered** by each identified assistance program to determine their alignment with the energy efficiency needs of the water treatment plant.
3. **Engage with relevant stakeholders**, including utility management, operations staff, energy efficiency experts, and potential funding agencies, to gather input, insights, and feedback on potential technical assistance opportunities.
4. **Conduct a feasibility analysis** of the identified technical assistance programs to assess their suitability for addressing the energy efficiency challenges and opportunities specific to the water treatment plant. Evaluate factors such as cost-effectiveness, scalability, and compatibility with existing infrastructure.
5. **Develop proposals outlining the energy efficiency projects and initiatives to be pursued** with the support of the selected technical assistance programs.
   a. Reference the 2019 Guaranteed Energy, Water, and Wastewater Performance Savings Contract for detailed West Water Treatment Plant energy consumption, identified priorities for retrofits, HVAC replacements, and results from a building envelope audit.
   b. Reference the 2021-2022 Annual Period 1 Performance Assurance Report[xv] for details on completed Water Plant efficiency upgrades, HVAC replacements and lighting retrofits.

Potential GHG Reduction: No estimated GHG emission reduction through research of assistance opportunities. Implementation of retrofits and energy upgrades that can result from securing technical assistance is linked to an estimated 10% reduction in

Energy-related emissions by 2050 based on realized energy savings presented in the 2021-2022 Annual Period 1 Performance Assurance Report.

Metrics for Tracking Progress:
Identified technical assistance opportunities.
Secured opportunities.
Energy consumption reduction.
Cost savings.
Energy efficiency

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 1

Comprehensive Plan:

- Climate Resiliency Element, Objective 1- Policies 1.1, 1.2, 1.8 and 1.12
- Climate Resiliency Element, Objective 3- Policies 3.1-3.4

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.

Broward County Climate Change Action Plan: Energy Resources Element, Action 91.

Regional Climate Action Plan 3.0: Energy Goal, EN-2.

Involved Departments: Sustainable Management, Procurement, City Manager's Office.

Estimated Cost: Staff time to implement.

Transportation Strategies

The Transportation Sector emerges as a focal point within the comprehensive Sustainability Roadmap for the City of Deerfield Beach. This section is dedicated to reshaping the city's mobility landscape, ushering in sustainable transportation practices that align with emission reduction targets and contribute to a resilient and eco-friendly urban environment. Before exploring areas for opportunity within the city, it is important to highlight the city's major transportation-related sustainability milestones, which include an On-site Compressed Natural Gas (CNG) fueling station installation and CNG Heavy Duty Trucks, a DBCRA-Freebee Rideshare Service - 100% electric, and upcoming Electric Vehicle Charging Station Contracting. The Transportation Sector addresses the intricate web of commuting patterns, vehicular activities, and mobility infrastructure. Recognizing the environmental impact of conventional transportation, the strategies outlined in this section are strategically designed to propel the City of Deerfield Beach towards a future where mobility is synonymous with sustainability, efficiency, and reduced carbon emissions.

Key findings from the City of Deerfield Beach Municipal Operations Greenhouse Gas Inventory underscore the pivotal role of the Transportation Sector in the city's overall emissions profile. The inventory revealed that 13% of municipal operations emissions were attributed to transportation in 2022, 90% of which were attributed directly to fleet related-emissions. This revelation serves as a compelling call to action, emphasizing the need for innovative strategies to revolutionize the city's transportation landscape.

Within this section, the roadmap unveils a set of key strategies poised to redefine the City of Deerfield Beach's transportation model.

Key strategies include:

T-1: Replace conventional vehicles with electric, hybrid, or alternative fuel vehicles and phase out older, high-emission vehicles.
T-2: Implement a car-sharing program and consolidate vehicle usage to minimize the number of vehicles in operation.
T-3: Conduct employee commute survey and implement Transportation Demand Management (TDM) strategies.
T-4: Offer educational resources and assistance to employees to reduce fossil fuel consumption.
T-5: Evaluate feasibility of additional operational uses for Compressed Natural Gas (CNG) and develop conversion program.
T-6: Amend Land Development Code to encourage green building practices in a multi-modal transportation system.

13% of total emissions originated from transportation sources within 2022.

Fleet fuel usage accounted for 90% of transportation-related emissions.

Related Strategies from the 2022 City Comprehensive Plan

Future Land Use Element

Objective FLU 1.5, Policy 1.5.4 and 1.5.6 | The TOD must include design features that promote and enhance pedestrian mobility, including connectivity to regional transit station. The use of Low Impact Design/Green infrastructure principles and BMPs are encouraged.

Objective FLU 8.1- Policy FLU 8.1.1 | Provide a variety of transportation choices; reduce commute times to work; reduce greenhouse gas emissions; amend its Land Development Regulations to incorporate smart growth, sustainable management.

Transportation Element

Objective TE 1.1 Multi-Model | Promote the reduction of greenhouse gas emissions; increases physical activity opportunities; coordinates and balances the transportation system with appropriate land uses, and sustainability of the environment; that is aesthetically pleasing; and that is coordinated with other adopted transportation plans, programs, neighboring counties and implementing agencies. Provide the opportunity for the use of multi-modal transportation options to serve the movement of and connections among people, jobs, goods, and services.

Conservation Element

Objective CON 1.1- Policy 1.1.3 | Reduce the potential for automobile emissions pollution by supporting developments such as, Transit Oriented Development (TOD), promoting alternative transportation modes such as carpooling, public transit, and increasing the use of alternative fuels in City owned vehicles.

Climate Resiliency Element

Objective 1- Policy 1.6 | Adopt strategies and sustainable initiatives that include promotion of electric vehicles and charging stations and enhancements to the built environment including green building policies and matters that support the reduction of GHGs.

Objective 4- Policies 4.3-4.5 | Expand engagement with the community and state, regional and other government partners to enhance communication and collaboration. Educate by outreach to the community through print, social media and other available avenues, provide educational and outreach materials to the public; schools; senior and community centers.

Related Strategies from the 2023 City Strategic Plan

Sustainability and Eco-Friendly Environment

Strategic Objective: Greening city operations.

Modernization of City Processes and Infrastructure

Essential Projects: CNG fuel maximization, alternative fuels, efficient fleet use, and update of Land Development Code.

Related Elements and Actions from the Broward County Climate Change Action Plan (CCAP)

Transportation Objective, Action 44, 47, 48 | Implement Transportation Demand Management (TDM) strategies including the expansion and encouragement of telework opportunities. Establish a clean fuel fleet. Electrify buses and fleet and install EV infrastructure. Maximize partnerships to further public EV knowledge, adoption, equitable access and utilization. Coordinate on EV charging infrastructure.

Related Objectives from the 2022 Regional Climate Action Plan 3.0 (RCAP)

Sustainable Communities and Transportation, ST-11. ST-14, ST-16, ST-22, ST-23| Employ transit-oriented developments. Support compact development patterns. Adopt green building standards to guide decision making and development. Require and/or incentivize better locations, design and construction of residential, commercial and mixed-use developments and redevelopment. Incorporate green infrastructure in transportation policy and project design. Enable a fuel-efficient public vehicle fleet. Reduce emissions and increase resilience via transportation planning.

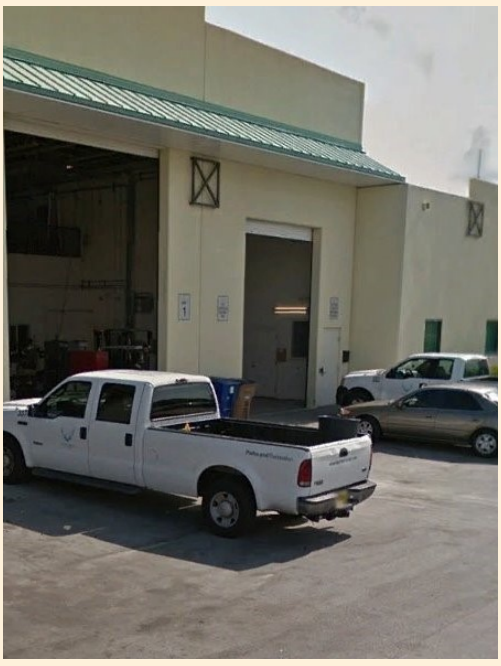
T-1 Replace conventional vehicles with electric, hybrid, or alternative fuel vehicles and phase out older, high-emission vehicles.

A phased transition plan is crucial for the successful implementation of this strategy. The recommendations outlined within the Implementation Steps represent a systematic schedule for retiring older vehicles and introducing low-emission alternatives. Prioritization is given to high-usage vehicles and those that are due for immediate replacement, ensuring an efficient and strategic shift toward a greener fleet. Fleet managers should set mileage thresholds (e.g., 100,000 miles) at which vehicles are considered for replacement.

For the successful integration of electric vehicles (EVs), investing in charging infrastructure is paramount. Identifying key locations for charging stations, both centralized and strategically dispersed, ensures convenient access for fleet vehicles.

Implementation Steps:

1. **Develop a fleet transition plan** based on 2022 data that identifies vehicles that are candidates for replacement based on age, fuel usage, and operational requirements. It is recommended that vehicles be prioritized based on age (2017 or older) and highest fuel usage.
    a. Replace 1-2 light duty trucks each year.
    b. Replace 1 heavy duty truck within the Environmental Services or Parks & Recreation Department each year.
    c. Transition 4 heavy duty trucks (garbage trucks) from Diesel to CNG by 2035.
2. **Develop an Electric Vehicle (EV) Procurement Strategy**
    a. Develop specifications and procurement procedures for acquiring electric vehicles, ensuring compliance with regulatory requirements and budget constraints.
    b. Solicit bids from EV manufacturers and suppliers.
3. **Establish charging infrastructure**
    a. Identify suitable locations for EV charging stations, considering factors such as proximity to fleet, parking availability, and power supply capacity.
    b. Develop a phased approach for installing charging infrastructure, prioritizing locations with high EV utilization and potential for future expansion.



i. Potential installation of two chargers at CCC A (contracts pending).
ii. Install one charger at City Hall by 2029.

4. **Training of employees**
    a. Provide training for fleet managers and drivers on EV operation, charging procedures, range management, and maintenance requirements.
5. **Continue to track fuel use** and VMT per vehicle and department for yearly vehicle replacement prioritization.
6. **Coordinate with Florida's Diesel Emissions Mitigation Program (DEMP) and EPA's Diesel Emissions Reduction Act (DERA) State Grant Program to identify opportunities for alternative fuel transit projects.**

Potential GHG Reduction: 4% reduction in Transportation-related emission by 2029, 20% reduction by 2050. Estimated based on an average 45% emission reduction per vehicle replaced.

Metrics for Tracking Progress:
Number of vehicles transitioned.
Fuel savings.
Number of EV chargers installed.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 2

Comprehensive Plan:

- Objective FLU 8.1- Policy FLU 8.1.1
- Objective CON 1.1- Policy 1.1.3
- Climate Resiliency Element, Objective 1- Policy 1.6

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
- Modernization of City Processes and infrastructure Essential Projects: CNG fuel maximization, alternative fuels, and efficient fleet use.

Broward County Climate Change Action Plan: Transportation Element, Actions 47, 48
Regional Climate Action Plan 3.0: Sustainable Communities and Transportation Goal, ST-22, ST-23.

Staff or Public Priority Identified in Workshops: Staff priority.

Involved Departments: Sustainable Management, Environmental Services, Planning and Development Services, City Commission, City Manager's Office, Purchasing.

Estimated Cost: $150,000 to $250,000 per vehicle.

Potential Funding Sources:

- Environmental and Climate Justice Community Change Grants Program
- Charging and Fueling Infrastructure Discretionary Grant Program
- Alternative Fuel Vehicle Refueling Property Tax Credit
- Charging & Fueling Infrastructure Grants (through FDOT)
- Community Development Block Grant
- Credit for Qualified Commercial Clean Vehicles Tax Credit
- Diesel Emissions Reduction Act Program (DERA)
- National Electric Vehicle Infrastructure (NEVI)

T-2 Implement a car-sharing program and consolidate vehicle usage to minimize the number of vehicles in operation.

As part of the City of Deerfield Beach's commitment to sustainability and efficient resource management, the implementation of a car-sharing program represents a strategic initiative to optimize vehicle usage within municipal operations. By adopting this approach, the city aims to reduce its carbon footprint, enhance transportation efficiency, and promote sustainable mobility practices among employees. Through the consolidation of vehicle usage and the introduction of a shared mobility solution, Deerfield Beach seeks to achieve significant environmental benefits while improving operational efficiency and cost-effectiveness.

Implementation Steps:

1. **Vehicle fleet right-sizing**
    a. Analyze the city fleet's operational needs and determine the optimal number and types of vehicles required to meet those needs efficiently.
    b. Meet with Department Directors and match vehicles to specific tasks based on factors such as fuel efficiency and operational requirements.
    c. Set usage thresholds- VMT, year built, etc.- to identify underutilized vehicles and remove each year.
        i. Ex: 45 vehicles used < 100 gallons in 2022
2. **Develop an in-house car-sharing platform** tailored to department needs and preferences.
    a. Set up protocol for vehicle access and pooling logistics.
    b. Promote self check out of vehicles to limit administrative involvement.
3. **Car-sharing infrastructure set up** including designated parking areas and chargers if applicable.

Potential GHG Reduction: An estimated 5-10% reduction from car-sharing and 10% reduction from fleet right-sizing by 2050. An approximate reduction of 56 MT CO2e by 2029 and 438 MT CO2e by 2050, respectively.

Metrics for Tracking Progress:
Reduction in fleet size.
Vehicle utilization rate.
Vehicle turnaround time.
Number of vehicle sharing instances.
Maintenance and repair costs.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 2

Comprehensive Plan:

- Objective FLU 8.1- Policy FLU 8.1.1
- Objective CON 1.1- Policy 1.1.3

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
- Modernization of City Processes and Infrastructure Essential Projects: CNG fuel maximization, alternative fuels, and efficient fleet use.

Regional Climate Action Plan 3.0: Sustainable Communities and Transportation Goal, ST-23.

Staff or Public Priority Identified in Workshops: Staff priority.

Involved Departments: Environmental Services, Sustainable Management, Parks & Recreation, Purchasing Department.

Estimated Cost: Staff time for implementation.

T-3 Conduct employee commute survey and implement Transportation Demand Management (TDM) strategies.

The purpose of this effort is to gain insights into how city staff members travel to and from work, identify opportunities for reducing carbon emissions associated with commuting, and develop strategies to promote more sustainable transportation options. By conducting a comprehensive survey and exploring various reduction strategies, the City of Deerfield Beach can aim to minimize the environmental impact of employee commuting while supporting organizational sustainability goals.

The implementation of Transportation Demand Management (TDM) strategies encompasses a multifaceted approach aimed at alleviating congestion, reducing emissions, and optimizing transportation systems. Central to this strategy is the expansion and promotion of telework opportunities, complemented by various other TDM initiatives. These include ridesharing and carpooling programs, promoting public transit usage, encouraging active transportation modes like walking and cycling, implementing flexible work schedules, managing parking supply and demand effectively, providing comprehensive transportation information and outreach, and integrating transportation considerations into land use planning. By employing this comprehensive suite of TDM strategies, the City of Deerfield Beach can foster sustainable travel behavior, alleviate pressure on transportation infrastructure, and create more efficient, equitable, and resilient transportation systems that benefit both residents and the environment.

Implementation Steps:

1. **Conduct employee commute survey**
    a. Design a comprehensive survey questionnaire to collect relevant information such as commuting distances, modes of transportation used, and willingness to participate in alternative commuting programs.
    b. Distribute the survey to all city employees through email or an online survey platform, ensuring anonymity and confidentiality.
    c. Collect and analyze survey responses to identify commuting patterns, common transportation modes, and potential areas for improvement.

2. **Explore Telework opportunities and flexible work schedules:**
    a. Promote and facilitate telework opportunities for employees across various departments. Encourage directors to adopt telework policies and provide support for remote work arrangements, such as technology infrastructure, flexible scheduling, and remote collaboration tools.
    b. Implementing flexible work schedules that allow employees to vary their work hours or work remotely on certain days. Flexible scheduling can help distribute peak travel demand more evenly throughout the day, reducing congestion during traditional rush hours.
3. Utilize employee commute survey results to **institute a ride sharing program** to promote carpooling among employees to reduce single-occupancy vehicle trips.
    a. Establish a centralized rideshare matching platform or system where employees can connect with potential carpool partners based on their commuting routes and schedules.
    b. Promote the rideshare program through internal communications channels, such as email newsletters, bulletin boards, and staff meetings.
    c. Offer incentives such as preferred parking spaces, carpooling rewards, or financial incentives to encourage employee participation in the rideshare program.
4. **Encourage employees to use mass transit**
    a. Provide employees with information on available transit routes, schedules, and fare options.
    b. Explore discounted transit passes or subsidies for employees to reduce the cost barrier associated with using public transportation.
    c. Organize informational sessions or workshops to educate employees about the benefits of mass transit, as well as city partnership and incentive programs.
    d. Coordinate city vehicle pick-up and drop-off of transit riders and promote transit-friendly policies such as flexible work hours to accommodate transit users.
5. **Encourage Active Transportation:** Encouraging walking and cycling as viable transportation options through the development of pedestrian and cycling infrastructure, such as sidewalks, bike lanes, and multi-use trails. Providing amenities such as bike racks, bike-sharing programs, and pedestrian-friendly streetscapes can further support active transportation.
6. **Parking Management:**

a. Implementing strategies to manage parking supply and demand, such as pricing mechanisms, time restrictions, and preferential parking for carpoolers or electric vehicles.

Potential GHG Reduction:
-Accounting for employee commuting would initially increase GHG emissions.
-According to the U.S. Environmental Protection Agency (EPA), taking public transit results in an estimated 50% reduction in GHG emissions per passenger mile.
-Carpooling or ride-sharing programs can reduce emissions by 30% - 50% per passenger compared to driving alone.

Metrics for Tracking Progress:
Number of participants.
Vehicle Miles Traveled (VMT) reduction.
Vehicle occupancy rates.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 2

Comprehensive Plan:

- Objective FLU 8.1- Policy FLU 8.1.1
- Objective CON 1.1- Policy 1.1.3

2020 Broward County Climate Change Action Plan (CCAP): Transportation Element, Action 44.

Regional Climate Action Plan 3.0: Sustainable Communities and Transportation Goal, ST-23.

Involved Departments: Environmental Services, Sustainable Management, Human Resources.

Estimated Cost: Dependent on incentives and partnerships.

T4 Offer educational resources and assistance to employees.

This strategy aims to provide comprehensive support for adopting sustainable transportation practices and encompasses a range of activities designed to inform, educate, and empower staff members to make environmentally friendly transportation choices. Through the implementation of this strategy, the City of Deerfield Beach can address the environmental impact of employee commuting while also promoting health, wellness, and cost savings. By providing access to informative guides, brochures, and online resources, launching targeted marketing campaigns, and establishing a dedicated resource hub on the city website, the city to equip employees with the necessary information and support to embrace sustainable transportation alternatives.

Implementation Steps:

1. **Collection of electronic informational resources** highlighting various sustainable transportation options such as public transit, biking, carpooling, walking, and telecommuting, as well as available educational and assistance programs.
    a. FPL public and fleet EV charging programs: FPL EVolution[xvi]
    b. Technical, practical, and financially tailored solutions customized to the workplace: Charge@Work[xvii]
    c. Workplace charging certification program that provides technical assistance: The Electric Vehicle Adoption Leadership (EVAL)[xviii]
    d. Guidance and resources for transitioning to electric transportation: The Florida Electric Vehicle Roadmap[xix]
    e. Opportunities from the Florida Department of Agriculture and Consumer Services for EV funding and technical assistance: The Alternative Fuel Transportation Program (AFT)[xx]
    f. Ensure that the materials include practical tips, benefits, cost-saving information, maps, and resources for each transportation option.
    g. Collaborate with relevant transportation authorities, environmental organizations, and advocacy groups to gather accurate and up-to-date information.
2. **Launch a marketing campaign.**
    a. Utilize internal communication channels such as email newsletters, staff meetings, and employee portals to disseminate information about the available resources.
3. **Create a "resource hub" on the city website.**

a. Provide a centralized platform for easy access to educational materials and resources.
b. Organize the hub into user-friendly categories such as transportation modes (e.g., public transit, biking, walking), tips for commuting, maps and routes, and telecommuting guidance.
c. Ensure that the online platform is easily accessible, mobile-friendly, and regularly updated with new information and resources.
d. Include interactive features such as calculators for estimating carbon emissions savings, commute planning tools, and links to external resources for further exploration.
e. Align hub with the hubs from B-5 and W-3.

Potential GHG Reduction: Estimated 5-10% reduction by 2050.

Metrics for Tracking Progress:
Participation and engagement rate.
Pre- and post-training assessments or surveys.
Behavior changes and sustainable practices implemented.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 2

Comprehensive Plan:

- Future Land Use Element, Objective FLU 8.1- Policy FLU 8.1.1
- Objective CON 1.1- Policy 1.1.3
- Climate Resiliency Element, Objective 1- Policy 1.6
- Climate Resiliency Element, Objective 4- Policies 4.3-4.5

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.

Involved Departments: All departments.

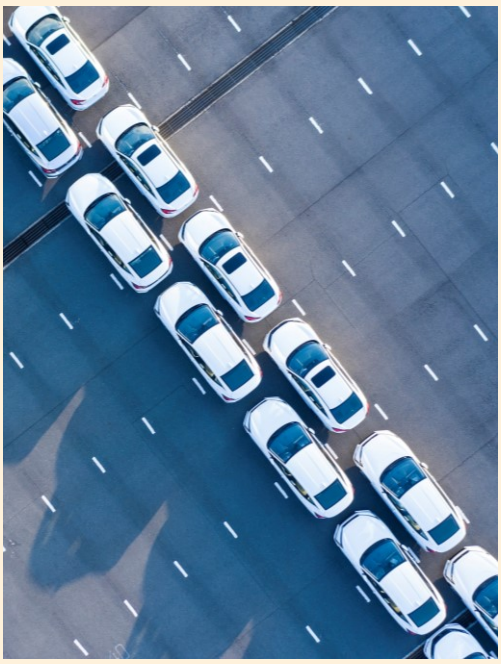
Estimated Cost: Staff time for implementation.

T-5 Evaluate feasibility of additional operational uses for Compressed Natural Gas (CNG) and develop conversion program.

This strategy for the Deerfield Sustainability Roadmap involves assessing the practicality of expanding the operational applications of Compressed Natural Gas (CNG) and establishing a conversion program. This initiative aims to explore the feasibility of utilizing CNG in additional operational capacities beyond its current usage and to devise a structured plan for transitioning relevant systems or vehicles to CNG. The ultimate goal is to enhance sustainability by leveraging the environmental benefits of CNG across various operational domains within the City of Deerfield Beach.

Implementation Steps:

1. **Technical Assessment**
    a. Conduct a comprehensive technical evaluation to assess the compatibility of CNG with various operational aspects, including fleet vehicles, generators, golf carts, equipment, and facilities.
    b. Evaluate existing infrastructure to determine its suitability for CNG storage, dispensing, and utilization.
    c. Identify any necessary modifications or upgrades required to integrate CNG effectively into operational systems.
    d. Engage with engineering and technical experts to ensure compliance with safety, performance, and regulatory standards.
2. **Economic Feasibility Analysis**
    a. Perform a thorough cost-benefit analysis to assess the financial viability of transitioning to CNG for additional operational uses.
    b. Calculate upfront capital investments required for infrastructure upgrades, equipment modifications, and vehicle conversions.
    c. Estimate ongoing operational costs, including fuel expenses, maintenance, and infrastructure upkeep.
    d. Explore potential long-term savings in fuel expenses and operational efficiency resulting from CNG integration.
    e. Identify funding mechanisms, incentives, grants, or partnerships to offset implementation costs and enhance economic feasibility.



3. **Pilot Testing and Validation**
    a. Conduct pilot testing of CNG conversion initiatives to validate feasibility, performance, and effectiveness. Select a subset of vehicles, equipment, or facilities for conversion and monitor their performance under real-world conditions.
    b. Collect data on fuel efficiency, emissions reduction, operational costs, and user feedback to assess the success of the pilot program.
4. **Development of Conversion Guidelines and Training**
    a. Create comprehensive conversion guidelines and training materials to support the implementation of the conversion program.
        i. These materials should include step-by-step procedures for vehicle or equipment modifications, safety precautions, maintenance requirements, and troubleshooting tips.
    b. Provide training sessions or workshops to educate personnel on CNG conversion processes and best practices.

Potential GHG Reduction: 2-5% reduction in Transportation-related emissions by 2050.

Metrics for Tracking Progress:
Conversion rate.
Fuel use and cost reduction.
Operational cost savings.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 2

Comprehensive Plan:

- Objective FLU 8.1- Policy FLU 8.1.1
- Objective CON 1.1- Policy 1.1.3

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
- Modernization of City Processes and infrastructure Essential Projects: CNG fuel maximization, alternative fuels, and efficient fleet use.

Broward County Climate Change Action Plan: Transportation Element, Actions 47, 48
Regional Climate Action Plan 3.0: Sustainable Communities and Transportation Goal, ST-22, ST-23.

Involved Departments: Sustainable Management, Environmental Services, Planning and Development Services, City Commission, City Manager's Office, Purchasing.

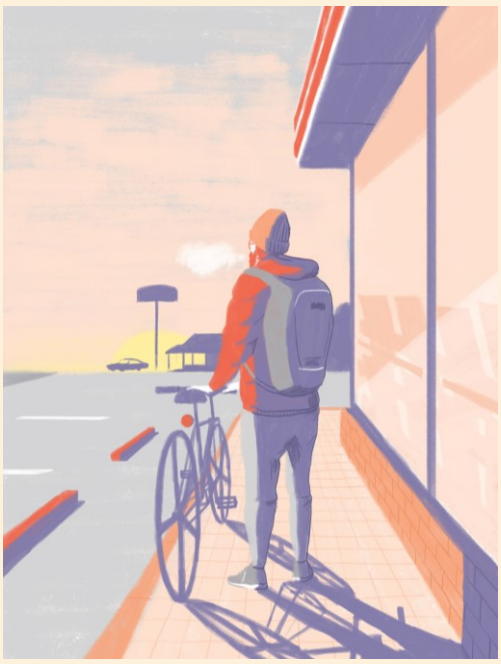
Estimated Cost: The approximate cost for converting a few generators and golf carts from diesel and gasoline to CNG could range from several thousand to tens of thousands of dollars per unit. A cost analysis will require quotes from reputable vendors or conversion specialists to accurately estimate the total conversion expenses.

T-6 Amend Land Development Code to encourage green building practices in multi-modal transportation system.

This strategy aims to enhance sustainable development practices within the community by amending the Land Development Code to promote green building initiatives in conjunction with the establishment of a multi-modal transportation system. Through this approach, the community can integrate environmentally friendly construction practices with a comprehensive transportation network that accommodates various modes of travel, including walking, cycling, public transit, and alternative fuel vehicles. By incentivizing green building practices such as energy efficiency, renewable energy integration, water conservation, and materials recycling, the amended Land Development Code can foster the creation of eco-friendly buildings and infrastructure that support a healthier, more resilient, and sustainable built environment. Additionally, by aligning these efforts with the development of a multi-modal transportation system, the strategy seeks to reduce reliance on single-occupancy vehicles, minimize carbon emissions, improve air quality, enhance mobility options, and promote active transportation choices, ultimately contributing to a more sustainable and livable community for residents, businesses, and visitors alike.

Implementation Steps:

1. **Policy Review and Analysis:**
    a. Conduct a thorough review of the existing Land Development Code to identify areas where amendments can be made to incentivize green building practices.
    b. Analyze best practices and case studies from other jurisdictions to inform the development of new policies and regulations that promote sustainability in building design, construction, and operation.
    c. Consider incorporating standards and certifications such as LEED (Leadership in Energy and Environmental Design) or Green Globes into the amended code to encourage developers to achieve higher levels of sustainability.
2. **Integration with Multi-Modal Transportation Planning:**
    a. Coordinate with transportation planners to integrate green building requirements and compact development principles into transportation policy and project design.



b. Identify synergies between green building practices and multi-modal transportation goals, such as locating developments near transit hubs, providing bicycle and pedestrian infrastructure, and promoting transit-oriented development.
c. Ensure that the amended Land Development Code supports the development of compact, walkable, and transit-friendly neighborhoods that minimize reliance on single-occupancy vehicles.

Potential GHG Reduction: 10% emission reduction by 2050 via policy implementation.

Metrics for Tracking Progress:
Number of green building practices implemented.
Mode share of transportation.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 2

Comprehensive Plan:

- Future Land Use Element, Objective FLU 1.5, Policy 1.5.4 and 1.5.6 and Objective FLU 8.1- Policy FLU 8.1.1
- Transportation Element, Objective FLU 1.5, Policy 1.5.4 and 1.5.6
- Objective CON 1.1- Policy 1.1.3

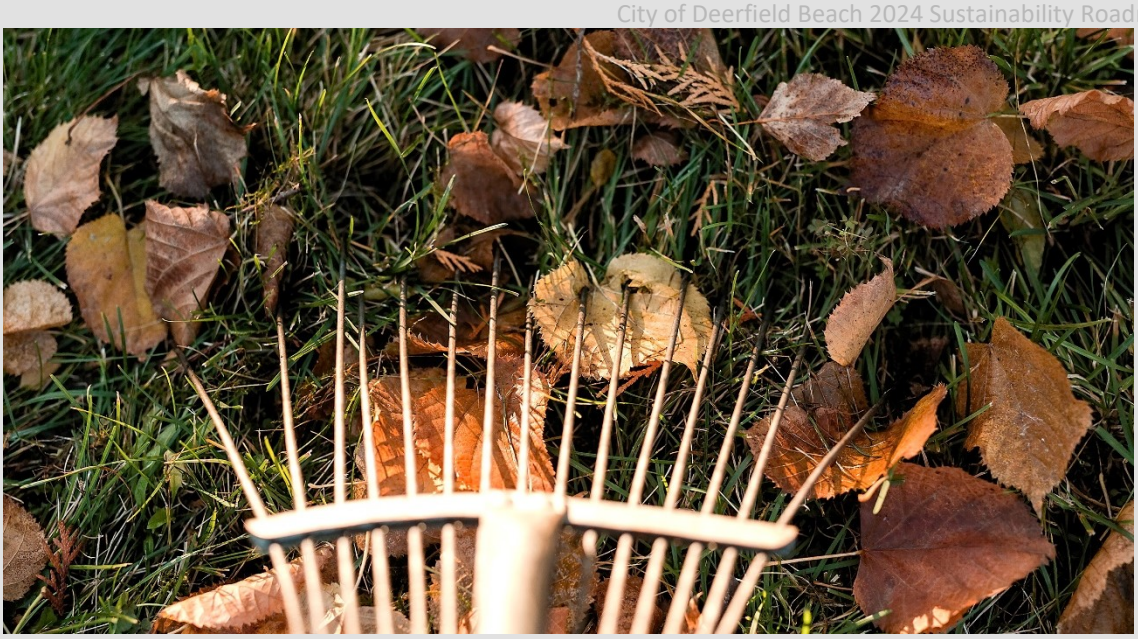
Strategic Plan:

- Modernization of City Processes and Infrastructure, Essential Projects: Update of Land Development Code.

Regional Climate Action Plan 3.0 (RCAP): Sustainable Communities and Transportation Goal, ST-11. ST-14, ST-16, ST-22, ST-23.

Involved Departments: Environmental Services, Sustainable Management, Planning and Development Services.

Estimated Cost: Staff time for implementation.



Waste Strategies

The Waste Sector section is dedicated to altering the city's approach to waste, fostering sustainable practices that align with emission reduction goals and local and nation-wide best practices, and that contribute to the creation of an environmentally resilient community.

Acknowledging the environmental impact of conventional waste practices, the strategies outlined in this section aim to propel the City of Deerfield Beach towards a future where waste is minimized, recycled, and repurposed, aligning with emission reduction targets and contributing to a circular and sustainable waste management system.

The City of Deerfield Beach Municipal Operations Greenhouse Gas Inventory highlights the significant impact of the Waste Sector on the city's overall emissions. According to the inventory, waste accounted for 54% of municipal operations emissions in 2022, with 91% of these emissions directly linked to solid waste.

Within this section, the roadmap outlines several key strategies intended to increase the sustainability of the City of Deerfield Beach's waste management practices. While emission reductions are a primary goal, the strategies outlined in the Waste Management Sector offer broader benefits to the community. A transition towards sustainable waste practices promises to reduce environmental pollution, conserve resources, and stimulate the local economy through innovative waste management initiatives.

Key strategies include:

- **W-1:** Implement plans and policies to reduce waste volumes.
- **W-2:** Expand the DFB Compost program to include additional city facilities and municipal landscaping material.
- **W-3:** Reduce and optimize waste collection and transportation.
- **W-4:** Organize waste reduction office campaign.

54% of total emissions originated from waste sources within 2022.

The transportation of solid waste accounted for 98% of solid waste-related emissions.

Related Goals and Policies from 2022 City Comprehensive Plan

Utilities Element

Objective UT 2.3- Policy 2.3.1 | Maintain secured capacity for disposal of its solid waste, maintain adequate and efficient collection services, minimize the amount of solid waste to be disposed and maintain sufficient and equitable financing measures to provide collection and disposal services that satisfy the demands of the system's customers. Continue to recycle 30% of its solid waste stream by increasing its recycling program. Continue to provide residential and commercial recyclable collection services and public education on methods, procedures, and benefits of recycling as part of its residential waste management program.

Future Land Use Element

Objective FLU 2.1 -Policies 2.2.13 and 2.2.14 |Encourage source separation and the recycling of solid waste. Landfills and resource recovery facilities shall be planned to minimize impacts on adjacent existing or planned uses.

Related Strategies from 2023 Strategic Plan

Sustainability and Eco-Friendly Environment

Strategic Objective: Greening city operations.

Modernization of City Processes and Infrastructure

Essential Projects: Composting waste diversion program, solid waste rate sufficiency and needs assessment, and public private partnerships for infrastructure and facility projects.

Related Elements and Actions from the Broward County Climate Change Action Plan (CCAP)

Healthy Community Objective, Actions 34, 35 | Require recycling of construction and demolition waste. Implement on-site organics (food waste and yard waste) collection in commercial, single-family and multifamily properties, including food waste collection in high-volume locations.

Energy Resources Objective, Action 96 | Reduce the amount of waste going to landfills.

W-1 Implement plans and policies to reduce waste volumes.

Strategy W-1 aims to mitigate waste generation, promote sustainable waste management practices, and advance environmental sustainability efforts. While the city provides recycling drop-off centers that support municipal facilities and the community, it is recommended that the city implements a general plan or policy to reduce waste volumes. It is critical that the contamination issues that resulted in the previous recycling program's suspension in 2020 be revisited and that efforts be taken to optimize recycling and avoid contamination.

To further reduce waste, the city can explore the implementation of a Resource Recovery Plan that would promote a more circular economy by diverting waste from landfills and instead repurpose it as a resource for generating new materials or services within the community. Together, these initiatives aim to mitigate municipal operation waste generation, promote sustainable waste management practices, and advance environmental sustainability efforts.

Involved Departments: Sustainable Management, Environmental Services, Planning Department

1. **Set target for each Department to go paperless via online application, payment and record keeping systems.**
2. **Develop a recycling program or policy.**
    a. Establish clear guidelines and procedures for employees and residents to participate in the recycling program effectively.
    b. Collaborate with Waste Connections and recycling facilities to ensure efficient collection, processing, and marketing of recyclable materials.
3. **Develop a Resource Recovery Plan.**
    a. Evaluate current waste management practices and identify opportunities for resource recovery, including potential sources of recyclable materials, organic waste, and other valuable resources.
    b. Assess the feasibility of implementing resource recovery initiatives based on factors such as economic viability, environmental impact, and community needs.
    c. Collaborate with stakeholders, including government agencies, businesses, nonprofit organizations, and community groups, to garner support for resource recovery efforts and foster collaboration.

d. Seek input from stakeholders to identify priorities, goals, and strategies for developing a resource recovery plan that aligns with the needs and values of the community.
e. Based on the findings of the assessment and stakeholder engagement process, develop a comprehensive resource recovery plan that outlines specific objectives, targets, and action steps for implementation.
f. Define roles and responsibilities for key stakeholders involved in the resource recovery plan, ensuring clear accountability and coordination throughout the process. Mandate the recycling of construction and demolition waste while promoting adherence to the standards set by the United States Green Building Council and the Florida Green Building Council for construction companies, haulers, and contractors.
    i. Offer incentives for recycling to haulers and promote construction practices that prioritize the utilization of recycled and reused materials.

Potential GHG Reduction: Estimated 2% reduction in Waste-related emissions by 2029 and a 10% reduction by 2050. The average reduction in GHG emissions achieved through a comprehensive recycling program and a Resource Recovery Plan can range from several hundred to over a thousand MT CO2e per year for a municipality.

Metrics for Tracking Progress:
Recycling rate.
Waste diversion rate.
Volume of recyclables collected.
Contamination rate.
Community participation.

Alignment with City, County, and Regional Policies and Goals: *Sustainability Roadmap Emission Reduction Targets:* Target 3 and Target 4

Comprehensive Plan

- Utilities Element, Objective UT 2.3- Policy 2.3.1
- Future Land Use Element, Objective FLU 2.1 -Policies 2.2.13 and 2.2.14

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
- Modernization of City Processes and Infrastructure- Essential Projects: Composting waste diversion program, solid waste rate sufficiency and needs assessment, and public private partnerships for infrastructure and facility projects.

Broward County Climate Change Action Plan (CCAP):

- Energy Resources Element, Action 96 | Reduce the amount of waste going to landfills.
- Healthy Community Element, Action 34| Require recycling of construction and demolition waste.

Staff or Public Priority Identified in Workshops: Staff priority.

Involved Department: Sustainable Management, Environmental Services, Planning Department.

Estimated Cost: Staff time for implementation.

W-2 Expand the DFB Compost program to include additional city facilities and municipal landscaping material.

Expanding the City of Deerfield Beach (DFB) Compost program marks a strategic initiative aimed at enhancing the city's sustainability efforts by incorporating additional municipal facilities and landscaping materials into the composting process. This strategy underscores the municipality's commitment to environmental stewardship and resource conservation. By broadening the scope of the composting program, the city can minimize organic waste sent to landfills, reduce greenhouse gas emissions, and promote the production of nutrient-rich compost for landscaping and agricultural purposes. This expansion aligns with DFB's sustainability objectives, fostering a more resilient and eco-friendly community while mitigating the environmental impacts associated with organic waste disposal.

Implementation Steps:

1. **Identify funding for program continuity**
2. **Conduct an assessment and inventory**
    a. Conduct a comprehensive assessment of existing composting infrastructure and capabilities.
    b. Inventory available organic waste materials generated by additional city facilities and municipal landscaping activities.
3. **Develop a program expansion strategy**
    a. Based on the inventory, identify five (5) city facilities to be added to the composting program by 2029.
    b. Create a municipal landscaping material pilot program with five (5) city facilities.
4. **Infrastructure development.**
    a. Upgrade and expand composting infrastructure at selected city facilities to accommodate increased waste volumes.
    b. Install composting bins at municipal landscaping sites for the collection and processing of organic materials.

Potential GHG Reduction: Estimated 1% reduction in Waste-related emissions by 2029 and a 5% reduction by 2050. This is approximately a reduction of 113 MT CO2e annually. *

*Based on the addition of **five** facilities to the current compost program. The GHG reduction from the landscaping pilot program would vary, and initial impact should be assessed to estimate future reductions.

Metrics for Tracking Progress:
Waste diversion rate.
Participation rate.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 3

Comprehensive Plan

- Utilities Element, Objective UT 2.3- Policy 2.3.1
- Future Land Use Element, Objective FLU 2.1 -Policies 2.2.13 and 2.2.14

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
- Modernization of City Processes and Infrastructure- Essential Projects: Composting waste diversion program, solid waste rate sufficiency and needs assessment, and public private partnerships for infrastructure and facility projects.

Broward County Climate Change Action Plan (CCAP):

- Healthy Community Element, Action 35 |Implement on-site organics (food waste and yard waste) collection in commercial, single-family and multifamily properties, including food waste collection in high-volume locations.
- Energy Resources Element, Action 96 | Reduce the amount of waste going to landfills.

Involved Department: Sustainable Management, Environmental Services Landscaping.

Estimated Cost: $18,500*
*Estimated cost is inclusive of staff hours, site assessment and planning, equipment, training and outreach, and monitoring.

Potential Funding Sources:

- Thriving Communities Grantmaking Program (EJ TCGM) Program
- Solid Waste Infrastructure for Recycling Infrastructure Grants (Local)

W-3 Reduce and optimize waste collection and transportation.

With an ever-growing population and increasing urbanization within the City of Deerfield Beach, optimizing waste collection and transportation processes becomes imperative for reducing environmental impacts. Strategy W-3 encompasses a multifaceted approach to enhancing waste management practices throughout the City of Deerfield Beach. At its core, the strategy aims to streamline waste collection and transportation processes to minimize environmental impacts associated with municipal operations. By implementing innovative technologies, adopting best practices, and fostering collaboration with stakeholders, the city seeks to optimize waste collection routes, reduce vehicle emissions, and mitigate the environmental footprint of its waste management activities.

Implementation Steps:

1. **Utilize Route Optimization Software**
    a. Invest in specialized software designed to optimize waste collection routes based on various factors such as location, waste volume, traffic patterns, and collection schedules. This software can analyze data to generate the most efficient routes for waste collection vehicles.
2. **Implement GPS Tracking Systems**
    a. Equip waste collection vehicles with GPS tracking systems to monitor their real-time location and movement. This allows supervisors to track vehicles' progress, identify any deviations from planned routes, and make adjustments as needed to optimize efficiency.
3. **Adopt Dynamic Routing Strategies**
    a. Implement dynamic routing strategies that allow collection vehicles to adapt their routes in response to real-time conditions such as traffic congestion, road closures, or changes in waste volume.
4. **Consider Variable Collection Schedules**
    a. Assess the feasibility of implementing variable collection schedules based on factors such as seasonal fluctuations in waste generation or changes in population density. By adjusting collection frequency and timing dynamically, the city can optimize routes to minimize travel distances and fuel consumption.

5. **Conduct Regular Route Audits**
    a. Continuously monitor and evaluate waste collection routes to identify areas for improvement and optimization. Conducting regular route audits allows the city to identify inefficiencies, such as overlapping routes or underutilized collection vehicles, and make data-driven decisions.

Potential GHG Reduction: 542 MT CO2e*

*Based on a 5% reduction after optimization.

Metrics for Tracking Progress:
Reduction in VMT.
Reduction in fuel consumption.
Vehicle maintenance costs.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 3

Comprehensive Plan

- Utilities Element, GOAL UT. 2.0

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
- Modernization of City Processes and Infrastructure- Essential Projects: Composting waste diversion program, solid waste rate sufficiency and needs assessment, and public private partnerships for infrastructure and facility projects.

Involved Department: Sustainable Management, Procurement, City Manager's Office.

Estimated Cost: $15,000 for route optimization software, $30,000 for GPS tracking.

Potential Funding Sources:

- Thriving Communities Grantmaking Program (EJ TCGM) Program
- Consumer Recycling Education and Outreach Grant Program
- Community Development Block Grant
- Consumer Battery Recycling Program
- ITC and PTC Tax Credits
- Emerging Contaminants in Small or Disadvantaged Communities
- Energy Efficiency & Conservation Block Grant Program
- Environmental and Climate Justice Community Change Grants Program
- Government-to-Government (EJG2G) Program
- Greenhouse Gas Reduction Fund
- Solid Waste Infrastructure for Recycling Infrastructure Grants (Local)
- Clean Water State Revolving Fund (CWSRF)
- Thriving Communities Grantmaking Program (EJ TCGM) Program

W-4: Organize waste reduction office campaign.

Strategy W-4 aims to offer educational resources and assistance to employees regarding waste reduction, recycling, and best practices and to empower and engage staff members in sustainable behaviors within the workplace. Through this initiative, employees will gain access to valuable information, tools, and support to minimize waste generation, increase recycling and composting rates, and adopt environmentally responsible practices. The strategy involves developing comprehensive educational materials, workshops, and training sessions tailored to employees' needs and preferences. Additionally, personalized assistance and guidance can be provided to help individuals implement waste reduction strategies effectively.

Implementation Steps:

1. **Compilation of electronic informational resources** highlighting best practices for waste reduction, recycling and composting, and water conservation.
    a. Leverage federal and county resources for waste reduction including Reducing Waste: What You Can Do | US EPA[xxi] and Recycling Single-Family Home (broward.org)[xxii].
2. **Disseminate resources by leveraging internal communication channels.**
3. **Generate a "resource hub" on the city website.**
    a. Create a centralized platform for easy access to educational materials and resources.
    b. Categorize information into easily accessible topics such as waste reduction, recycling best practices, and composting program information and participation guidance.
    c. Align hub with the hubs from B-7 and T-4.

Potential GHG Reduction: 909 MT CO2e by 2050. *****

*Based on the mid-range of the estimated 5-10% reduction.

Metrics for Tracking Progress:
Participation and engagement rate.
Pre- and post-training assessments or surveys.
Behavior changes and sustainable practices implemented.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 3

Comprehensive Plan

- Utilities Element, Objective UT 2.3- Policy 2.3.1
- Future Land Use Element, Objective FLU 2.1 -Policies 2.2.13 and 2.2.14

Strategic Plan:

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.
- Modernization of City Processes and Infrastructure- Essential Projects: Composting waste diversion program, and solid waste rate sufficiency and needs assessment.

Broward County Climate Change Action Plan (CCAP): Energy Resources Element, Action 96.

Involved Departments: All departments.

Estimated Cost: Cost is dependent on staff involvement and number of hours spent. It is estimated that program development will require 15-25 staff hours, inclusive of resource compilation, researching, and organization. It is estimated that training participation will require 12-25 hours, inclusive of training session planning, conducting sessions, and follow up and feedback collection.

Community Strategies

The Community Strategies section outlines key initiatives aimed at promoting sustainability practices throughout the City of Deerfield Beach. These strategies aim to address pressing environmental challenges and to enhance the quality of life for all residents.

The community-wide strategies within this section aim to promote environmental stewardship, resource efficiency, and community sustainability. From encouraging energy conservation and sustainable transportation to raising awareness about waste reduction and promoting native tree planting, these initiatives are integral to shaping a more sustainable future for the City of Deerfield Beach. Each strategy outlined in this section represents a commitment to proactive and practical solutions that can make a meaningful difference in the community.

Providing informational resources and promoting awareness of sustainability strategies play a crucial role in increasing the sustainability of the city and empowering residents. By offering access to educational materials, residents gain a better understanding of sustainability concepts, practices, and their significance. This knowledge can empower them to make informed choices and adopt sustainable behaviors in their daily lives. As more individuals embrace these behaviors, the collective impact leads to significant reductions in resource consumption and environmental footprint.

Key strategies include:

C-1: Offer educational resources about energy conservation and solar installation to community members.
C-2: Promote city-wide use of electric vehicles and sustainable transportation practices.
C-3: Increase awareness of waste reduction and water conservation practices.
C-4: Promote native tree planting across the city.
C-5: Promote sustainability initiatives at events and collect data on public interests for sustainability initiatives.

Related Goals and Policies from the City Comprehensive Plan

Future Land Use Element

Objective FLU 1.5- Policy FLU 1.5.6 | Mixed use development in areas served by regional transit stations; establishment of a TOD that promotes and enhance pedestrian mobility, including connectivity to regional transit stations.

Objective FLU 4.1- Policy FLU 4.1.2 | Maintain a system of parks; ensure the City's Land Development Code protects existing and designated parks, recreation, conservation, and open space lands from future development.

Objective FLU 8.1- Policy FLU 8.1.1 | Provide a variety of transportation choices; reduce commute times to work; reduce greenhouse gas emissions; amend its Land Development Regulations to incorporate smart growth, sustainable management.

Objective FLU 5.3- Policy FLU 5.3.6 | Protect areas known to contain plant species listed in the Regulated Plant Index.

Objective FLU 5.3- Policy FLU 5.3.9 | Maintain and enforce the tree preservation ordinance in the City's Land Development Code.

Objective FLU 5.4 | Require landscaping to be consistent with the principles of Florida-Friendly Landscaping and the requirements in Section 98-80 of the Land Development Code.

Transportation Element

Objective TE 1.1- Policies TE 1.1.13 and TE 1.1.15 | Multi-modal transportation options; pedestrian and bicycle infrastructure linking neighborhoods to the transit system; adopt the County's short-term bicycle and pedestrian LOS standards, and its long-term transit, bicycle and pedestrian standards.

Objective TE 1.1- Policies TE 1.1.16 and TE 1.1.18 | Enhance pedestrian and bicyclist shade/cooling through codes and standards; context sensitive placement of utilities ensuring planting of "Florida Friendly" trees.

Utilities Element

GOAL UT. 2.0 | Maintain adequate and efficient collection services and minimize the amount of solid waste to be disposed.

Conservation Element

Objective CON 1.6- Policy 1.6.2 | Maintain or reduce the average daily per capita water demand and continue and expand its water conservation practices through a public information/education program and enforcement of the Florida Building Code and City regulations for ultra-low volume plumbing flow restriction on new construction.

Objective CON 1.6- Policy 1.6.5 | Land Development Regulations shall recommend the use of Florida-friendly landscaping principles as listed in the Land Development Code, and the SFWMD's Waterwise plant guide.

Objective CON 1.6- Policy 1.7.7| Implement regulations that protect and preserve trees, including those in areas of native vegetation and promote the use of native vegetation in landscape plans.

Intergovernmental Coordination Element

Objective IC 1.6- Policy 1.6.1 | Strive to make sustainability and climate resiliency efforts more impactful through coordination and cooperation with appropriate agencies, and through consideration during the planning process. Continue to collaborate in the identification and implementation of appropriate mitigation, protection, and adaptation strategies.

Climate Resiliency Element

Objective 1- Policies 1.1, 1.2, 1.6, 1.8, and 1.12| Adopt strategies and sustainable initiatives that include energy efficiency and renewable energy, sustainable land use practices and policy development. Adopt Land Development Code amendments that support energy efficiency, GHG reduction and conservation; continue energy use monitoring and baseline management for city government activities and operations; include promotion of electric vehicles and charging stations; enhancements to the built environment including green building policies and matters that support the reduction of GHGs; encourage sustainable building practices such as energy and water efficiency, green infrastructure, solar energy, and reduce pollution and urban heat island; continue to update the Land Development Code to encourage sustainable initiatives and reduce GHG emissions of both its government operations and the community at large.

Objective 3- Policies 3.1-3.9 | Implement policies and strategies that enhance and support the natural environment and continue to support energy and water conservation. Develop and refine greenhouse gas (GHGs) policies and procedures; develop initiatives that help reduce greenhouse gases within the community through development of sustainable policies and procedures; continue to support Florida-friendly landscaping within the Land Development Code; continue to support and implement water conservation measures and planting of native vegetation; encourage practices to reduce the urban heat island effects such as increasing urban tree canopy.

Objective 4- Policies 4.3-4.5 | Expand engagement with the community and state, regional and other government partners to enhance communication and collaboration. Educate by outreach to the community through print, social media and other avenues, provide educational outreach materials to the public, schools and community centers.

Related Strategies from 2023 Strategic Plan

Sustainability and Eco-Friendly Environment

Strategic Objective: Greening city operations and community waste reduction.

Modernization of City Processes and Infrastructure

Strategic Objective: Establishment of City-wide Objectives, Measures and Strategic Plan.

Related Elements and Actions from the Broward County Climate Change Action Plan (CCAP)

Policy Element, Actions 13, 17 | Implement and promote Dark Skies outdoor lighting policy model ordinance. Set a plastic waste reduction goal.

Healthy Community Element, Actions 22, 26, 28, 30 | Engage volunteer corps. Enhance the urban tree canopy to protect walkers, transit riders and bicyclists from heat and pollution. Engage academia in research. Reduce urban heat island effect.

Transportation Element, Action 48 | Maximize partnerships to further public EV knowledge, adoption, equitable access and utilization. Coordinate on EV charging infrastructure.

Energy Resources Element, Actions 91 and 92| Continue to reduce energy consumption, explore options for electrification of fossil-fuel equipment. Promote energy efficiency in the community. Require large buildings to benchmark and report their energy performance. Recruit municipal and educational buildings to use the ENERGY STAR Portfolio Manager to track energy use and compare usage to similar properties.

Related Goals from the Regional Climate Change Action Plan 3.0 (RCAP)

Natural Systems, NS-15 | Protect tree canopy and urban green spaces.

Public Health, PH-3 | Address heat risks to frontline communities.

Sustainable Communities and Transportation, ST-23| Reduce emissions and increase resilience via transportation planning.

Energy, EN-2 and EN-4 | Advance energy efficiency and conservation. Expand use of renewable energy.

C-1 Offer educational resources about energy conservation and solar installation to community members.

Strategy C-1 aims to empower residents with the knowledge and tools needed to adopt sustainable practices and renewable energy solutions. By providing comprehensive educational resources, including guides and online materials, residents can learn about the benefits of energy conservation and the installation of solar panels in their homes or businesses. These resources can cover topics such as the importance of reducing energy consumption, practical tips for energy conservation, the environmental and financial benefits of solar energy, and the process of installing solar panels. Moreover, the dissemination of information through various channels such as community events, social media, and local newsletters ensures that the resources reach a wide audience and are accessible to all members of the community.

Implementation Steps:

1. **Compile informational resources for community members**
    a. Collect resources, including guides, articles, videos, and FAQs, related to energy conservation and solar installation.
        i. EPA- What You Can Do About Climate Change-Energy[xxiii]
2. **Promote existing financing pathways** including Property Assessed Clean Energy (PACE), Solar and Energy Loan Fund (SELF), and Solar United Neighbors (SUN) Co-op.
    a. Solar United Neighbors (SUN)[xxiv]
    b. Broward County Solar Co-op Program[xxv]
    c. FPL's Solar Programs: SolarTogether[xxvi] and SolarNow[xxvii]
    d. Property Assessed Clean Energy (PACE) Program[xxviii]
    e. FPL Ways to Save Energy Saving Programs[xxix]
    f. SolSmart[xxx]- points for community engagement
3. **Provide a "resource hub" or a dedicated webpage** on the city website for resident specific resources.
    a. Structure the resource hub into easily navigable sections such as energy conservation tips, solar panel installation guides, case studies, and frequently asked questions.
    b. Ensure the resource hub is accessible to all residents, including those with disabilities.

4. **Implement energy efficiency and environmental programs in schools**
    a. Partner with local schools to introduce energy efficiency and environmental programs into their curriculum:
        i. Quiet Waters Elementary School
        ii. Deerfield Park Elementary School
        iii. Deerfield Beach Middle School
        iv. Deerfield Beach Elementary School
        v. Deerfield Beach High School
    b. Organize educational materials and programs on energy conservation, renewable energy, and environmental sustainability, by leveraging federal and county resources:
        i. How low can you go challenge[xxxi]
        ii. The Efficient and Healthy Schools Campaign[xxxii]
        iii. ENERGY STAR Energy Efficiency Student Toolkit[xxxiii]
        iv. Broward County Public Schools Applied Learning Environmental Stewardship Programs and Resources[xxxiv]
    c. Organize workshops, presentations, and sessions in schools to educate students about the importance of energy conservation and the benefits of solar energy.
5. Implement Dark Skies outdoor lighting ordinance.

Metrics for Tracking Progress:
Feedback and engagement surveys.
Number of residents who have installed solar panels following engagement.
Reduction in energy consumption or increase in solar adoption rates.
Number of schools participating in energy efficiency and environmental programs.
Student enrollment and participation rates in workshops and presentations.
Energy savings achieved through implementation of efficiency measures in schools.

Alignment with City Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 5

Comprehensive Plan: Climate Resiliency Element, Objective 1- Policies 1.6, Policy 1.8; Objective 3- Policy 3.1, Policy 3.2; Objective 4- Policies 4.3-4.5

Strategic Plan

- Modernization of City Processes and Infrastructure Strategic Objective: Establishment of City-wide Objectives, Measures and Strategic Plan.

Broward County Climate Change Action Plan (CCAP):

- Policy Element, Action 13
- Energy Resources Element, Actions 91 and 92
- Healthy Community Element, Action 22

Regional Climate Action Plan 3.0 (RCAP): Energy Goal, EN-2 and EN-4

Involved Departments: Sustainable Management.

Estimated Cost: Staff time for implementation.

C-2 Promote city-wide use of electric vehicles and sustainable transportation practices.

This strategy serves to advance residents' sustainable transportation practices including the adoption of electric vehicles (EVs) and to support city-wide innovative transit-oriented development (TOD) initiatives. As part of this strategy, the city can commit to providing comprehensive resources to support residents' transition to EVs, including information on expanding charging networks and facilitating access to incentives. Additionally, the promotion of TOD principles into urban planning ensures that transportation hubs are strategically located and connected, optimizing accessibility and reducing reliance on private vehicles.

Implementation Steps:

1. **Compile informative materials** on EV incentives, purchasing, EV chargers, and sustainable transportation practices. Leverage available resources:
    a. Plug In America[xxxv]: The nation's largest nonprofit organization dedicated to educating the public, automakers and policymakers on the efficacy and benefits of driving electric. Explore Why Go Plug-in?[xxxvi], Federal EV Tax Credits[xxxvii], EV Guide[xxxviii], EV Charging 101[xxxix], EV Safety[xl], FAQs[xli], Used EV Buyer's Guide[xlii], Why I Drive Electric[xliii], and Links and Resources[xliv].
    b. PlugStar[xlv]: Residents can see which EV models and home chargers are the best matches for them, get equipped for charging at home, and find qualified electricians for home upgrades and charger installation.
    c. Alternative Fueling Station Locator[xlvi]: Find alternative fueling stations in Florida.
    d. Federal Tax Credits for Plug-in Electric and Fuel Cell Electric Vehicles Purchased in 2023 or After[xlvii]
    e. EPA- What You Can Do About Climate Change-Transportation[xlviii]
2. **Distribute these materials through various channels**, including city websites, social media platforms, and community events.
    a. Set up dedicated centers or online portals where residents can access detailed information, FAQs, and guidance on home solar installations and EV ownership. Provide contact details for expert assistance and support.

   b. Partner with local solar companies, EV dealerships, and industry experts to offer workshops, webinars, and training sessions on solar energy and EV technologies. Encourage participation from residents and businesses.
3. **Consider expanding existing or creating additional Transit-Oriented Development (TOD) Zones**
   a. Evaluate the effectiveness of current TOD policies and regulations in achieving sustainability and mobility goals, such as reducing car dependency, promoting mixed-use development, and improving transit ridership.
   b. Conduct an inventory of the existing TOD zones and activity centers (York Residential and Deerfield Beach Pioneer Grove Activity Center) within the city, including their location, size, land use mix, transit accessibility, and development density.
      i. Analyze transportation infrastructure and transit connectivity in and around existing TOD zones, considering factors such as proximity to transit stations, frequency of service, and walkability.
   c. Assess land use patterns and development trends in the vicinity of transit corridors to identify areas with potential for TOD designation based on criteria such as population density, employment centers, and transit demand.
      i. Conduct feasibility studies and site assessments to evaluate the suitability of potential locations for new TOD zones based on factors such as transit accessibility, land availability, zoning regulations, and market demand.
4. **Track success of the Community Redevelopment Agency FreeBee Program** and explore future expansion of services
   a. Actively collect and monitor the monthly reports provided by FreeBee showing data and analytics related to ridership in the FreeBee vehicles.
   b. Create an annual report and identify strengths and weaknesses of program and suggest amendments to service times and processes, points of interest, or service area designation.
   c. Consider expansion of the CRA service area or expanding FreeBee services to adjacent areas.

Metrics for Tracking Progress:
Frequency of engagement with online resources.
TOD effectiveness, such as transit ridership, land use mix, and pedestrian activity.
Total number of Freebee rides provided within the current service area.
Freebee usage patterns, including peak hours, popular destinations, and frequency of use per rider.

Alignment with City, County, and Regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 5

Comprehensive Plan

- Future Land Use Element, Objective FLU 1.5- Policy FLU 1.5.6, Objective FLU 8.1- Policy FLU 8.1.1
- Transportation Element, Objective TE 1.1- Policy TE 1.1.13
- Intergovernmental Coordination Element, Objective IC 1.6-Policy 1.6.1
- Climate Resiliency Element, Objective 1- Policies 1.1, 1.3, 1.6; Objective 3- Policy 3.1, Policy 3.2; Objective 4- Policies 4.3-4.5

Strategic Plan:

- Sustainability and Eco-Friendly Environment, Strategic Objective: Greening city operations and community waste reduction.
- Modernization of City Processes and Infrastructure, Strategic Objective: Establishment of City-wide Objectives, Measures and Strategic Plan.

Broward County Climate Change Action Plan (CCAP): Transportation Element, Action 48.

Regional Climate Action Plan 3.0 (RCAP):

- Sustainable Communities and Transportation Goal, ST-23.

Involved Departments:
Sustainable Management, Environmental Services, Planning and Development Services, City Commission, City Manager's Office, Community Services, Parks and Recreation (Transportation Services).

Estimated Cost: Varies*
*Cost of potential future expansion of TOD or FreeBee services depends on the size of the area and the scale of expansion efforts.

C-3 Increase awareness of waste reduction practices.

Strategy C-3 entails a strategic and coordinated approach to educate, engage, and empower residents across the city. Through targeted educational campaigns, community outreach, and collaborative partnerships, the intention is to furnish individuals and entities with knowledge, tools, and resources necessary to embrace sustainable waste management practices. Leveraging diverse communication channels and employing innovative engagement strategies, the goal is to heighten awareness regarding the significance of waste reduction, recycling, and proper disposal methods. Furthermore, by facilitating access to information and support services, the aspiration is to inspire behavior change and foster the adoption of sustainable habits conducive to fostering a cleaner, greener community.

Implementation Steps:

1. **Offer educational resources about waste reduction practices and programs.**
    a. Provide informative materials including brochures, fact sheets, and online resources, detailing waste reduction practices, and recycling and composting guidelines.
        i. EPA- What You Can Do About Climate Change-Waste[xlix]
    b. Utilize various communication channels, such as the city website, social media platforms, community newsletters, and local events, to disseminate educational content to residents, businesses, and organizations.
    c. Collaborate with local schools, community centers, and environmental organizations to host workshops, seminars, and informational sessions on waste reduction strategies and programs.
2. **Spread awareness of the DFB Compost program.**
    a. Launch targeted marketing campaigns to raise awareness of the city's composting program and its benefits for waste diversion and environmental sustainability.
    b. Provide incentives, such as discounted compost bins or free composting workshops, to encourage participation in the program.
    c. Implement outreach initiatives, including door-to-door canvassing, community presentations, and participation in local events, to engage residents and increase enrollment in the composting program.

i. Consider partnering with schools and summer camps.

3. **Increase involvement in the DFB Compost program.**
    a. Set a target of enrolling an additional 210 participants in the city composting program by 2029 with incremental milestones to track progress toward the goal (40 additional residents per year).
    b. Explore opportunities to expand the program's reach by collaborating with neighboring municipalities, homeowner associations, and multifamily housing complexes to offer composting services to a wider audience.
    c. Continuously assess and adapt outreach strategies based on community feedback, emerging trends, and best practices in waste management and education.
    d. Develop partnerships with local businesses and organizations to sponsor composting workshops, provide funding for program expansion, and support outreach efforts aimed at increasing participation in the program.

Metrics for Tracking Progress:
Participation rate.
Education and outreach engagement.
Cost effectiveness.

Alignment with City, County, and regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 5

Comprehensive Plan

- Utilities Element, Utilities Element, GOAL UT. 2.0

Strategic Plan

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations and community waste reduction.

Broward County Climate Change Action Plan (CCAP):

- Healthy Community Element, Action 35
- Energy Resources Element, Action 96
- Policy Element, Action 17

Staff or Public Priority Identified in Workshops: Public priority.

Involved Departments: Sustainable Management, Environmental Services, Community Services.

Estimated Cost: $30,000

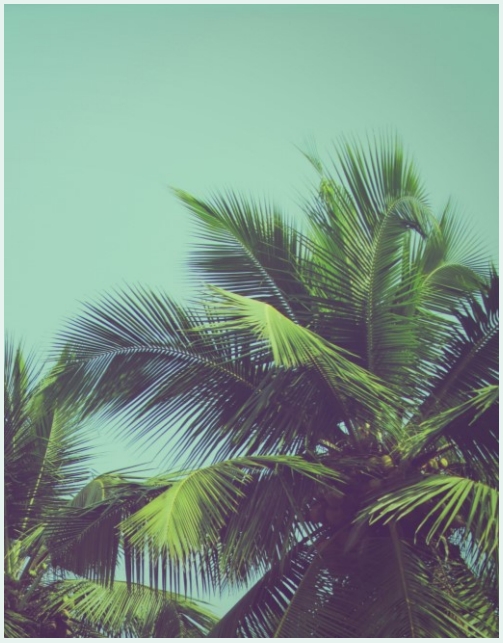
Potential Funding Sources:

- Thriving Communities Grantmaking Program (EJ TCGM) Program
- Solid Waste Infrastructure for Recycling Infrastructure Grants (Local)

C-4 Promote native tree planting across the city.

The strategy to promote native tree planting across the city aims to enhance environmental sustainability, biodiversity, and ecosystem resilience by encouraging the widespread cultivation of indigenous tree species. Native trees are well-suited to the local climate, soil conditions, and ecosystem dynamics, making them more resilient to environmental stressors and better able to support native wildlife. Native trees offer a range of ecosystem services, such as air and water purification, soil stabilization, and carbon sequestration. Promoting native tree planting across the city serves to help mitigate the urban heat island effect, decrease energy needs, improve air quality, and reduce stormwater runoff, thereby enhancing the overall environmental quality of the city. Tree planting initiatives can also provide opportunities for community engagement and involvement in environmental stewardship efforts. Residents can participate in tree planting events, volunteer for tree maintenance activities, and take pride in greening their neighborhoods.

1. **Prioritize native shade trees, shaded pedestrian facilities, and use of trees in stormwater maintenance.**
    a. Identify suitable locations for planting native shade trees, prioritizing areas with high pedestrian traffic, such as sidewalks, parks, and recreational areas.
    b. Select native tree species that are well-adapted to local soil and climate conditions, ensuring they provide adequate shade and enhance the urban environment.
    c. Reference the following resources and guidance:
        i. South Florida Water Management District: SFWMD's Waterwise Plant Guide[i]
        ii. University of Florida Institute of Food and Agricultural Sciences (IFAS) Extension: Florida-Friendly Landscaping™ Program[ii] , FLL Plant Guide[iii]
        iii. Arbor Day Foundation: The Right Tree in the Right Place[iii], The Tree Guide[iv] , Best Tree Finder: Tree Wizard[v]
    d. Integrate native trees into stormwater management strategies to help mitigate impacts of runoff and erosion.
    e. Plant trees along water bodies, swales, and retention ponds to stabilize soil, absorb excess moisture, and filter pollutants from stormwater runoff.
2. **Create incentives for homeowners to plant trees**, such as free tree giveaways at city events.



   a. Develop incentive programs to encourage homeowners to plant native trees on their properties.
   b. Offer bi-annual free native tree giveaways of 100 trees at city events, workshops, or community gatherings to promote tree planting and increase public participation.
   c. Provide educational materials to homeowners on the benefits of native trees and proper tree care practices.
   d. Focus efforts in less resourced neighborhoods.
3. **Pursue certification as a Tree City USA[lvi] through the Arbor Day Foundation**.
   a. Demonstrate the city's commitment to urban forestry and community greening initiatives.
   b. Meet the criteria for Tree City designation- Establishment of a tree board or department, a tree care ordinance, a community forestry program, and an Arbor Day observance.
4. **Become an Energy- Saving Trees Partner and/ or Community Canopy Partner[lvii]**
5. **Pursue certification as a Certified National Wildlife Federation Community Wildlife Habitat[lviii]**

Metrics for Tracking Progress:
Number of native trees planted.
Community participation.
Partnerships and certifications.

Alignment with City, County, and regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 5

Comprehensive Plan

- Future Land Use Element, Objective FLU 5.3- Policy FLU 5.3.9
- Transportation Element, Objective TE 1.1- Policies TE 1.1.16 and TE 1.1.18
- Conservation Element, Objective CON 1.6- Policy 1.7.7
- Climate Resilience Element, Objective 3- Policies 3.1-3.9

Strategic Plan

- Sustainability and Eco-Friendly Environment Strategic Objective: Greening city operations.

Broward County Climate Change Action Plan (CCAP):
Healthy Community Element, Actions 28 and30

Regional Climate Action Plan 3.0 (RCAP): Natural Systems Goal, NS-15, Public Health, PH-3

Staff or Public Priority Identified in Workshops: Public priority.

Involved Departments: Community Services, Purchasing Department, Public Affairs and Marketing, Sustainable Management.

Estimated Cost: $13,000 for tree giveaways*
*Additional costs dependent on program participation and partnership fees. Tree cost can be reduced based on partnership.

Potential Funding Sources:

- Environmental and Climate Justice Community Change Grants Program
- FEMA Hazard Mitigation Grants
- Clean Water State Revolving Fund (CWSRF)
- Green Infrastructure Funding
- Arbor Day Foundation

C-5 Promote sustainability initiatives at events and collect data on public interests for sustainability initiatives.

Leveraging public events to promote city sustainability initiatives and to gather valuable feedback from residents helps to generate buy in and provide information of city efforts. By engaging with the community in a dynamic and interactive manner, the city can raise awareness about ongoing and planned sustainability projects, encourage environmentally responsible behaviors, and gather insights into public interests and priorities. This approach will help the city tailor its sustainability programs to better meet the needs and expectations of its residents.

1. **Identify key events for promotion**, including annual festivals and events such as Earth Day.
    a. Identify events at the beginning of each fiscal year.
    b. Create a calendar listing all identified events and assign Sustainable Management team members to each event to ensure consistent presence.
2. **Develop promotional materials,** such as brochures, posters, digital content, and interactive displays, that highlight the city's sustainability efforts and future plans.
    a. Ensure materials are visually appealing and easy to understand.
3. **Train volunteers and staff** to effectively communicate sustainability initiatives and interact with the public during events.
    a. Training should cover key talking points, FAQs, and engagement strategies.
4. **Set up interactive booths** at events where residents can learn about sustainability initiatives, participate in interactive activities, and provide feedback.
5. **Conduct surveys and collect feedback** on public interests, concerns, and suggestions related to sustainability.
    a. Surveys can be paper-based, digital, or both, and should include open-ended questions to gather detailed feedback.
6. **Analyze feedback and report findings.**
    a. Analyze the collected data to identify trends, preferences, and areas for improvement in the city's sustainability initiatives.
    b. Use data visualization tools to create clear and informative reports.
7. **Integrate feedback into sustainability planning.**
    a. Use the collected data and insights to inform and adjust the city's sustainability plans and initiatives.

b. Prioritize projects that align with public interests and address identified concerns.
c. Regularly update residents on how their feedback is being used and the progress of sustainability initiatives through newsletters, social media, and the city's website.

Metrics for Tracking Progress:
Number of events where initiatives were actively promoted.
Number of surveys collected.
Community participation.

Alignment with City, County, and regional Policies and Goals:
Sustainability Roadmap Emission Reduction Targets: Target 5

Comprehensive Plan: Climate Resiliency Element, Objective 4- Policies 4.3-4.5

Strategic Plan

- Modernization of City Processes and Infrastructure Strategic Objective: Establishment of City-wide Objectives, Measures and Strategic Plan.

Involved Departments: Community Services, Public Affairs and Marketing, Sustainable Management.

Estimated Cost: Staff time to implement.

Conclusions and Next Steps

Key Takeaways and Next Steps

The Deerfield Beach 2024 Sustainability Roadmap and Workplan charts a strategic pathway toward a sustainable future, emphasizing the city's commitment to reducing its carbon footprint associated with municipal operations. This initiative builds on detailed insights from the Municipal Operations Greenhouse Gas (GHG) Inventory and aligns with over 30 existing city policies and regional climate action plans. The roadmap prioritizes sustainability within municipal operations, leveraging existing staff and resources to ensure focused and manageable efforts to achieve set strategies. Aligned with the City's 2022 Comprehensive Plan, 2023 Strategic Plan, and regional climate initiatives such as the Broward County Climate Action Plan (CCAP) and the Southeast Florida Regional Climate Change Compact Regional Climate Action Plan 3.0 (RCAP), the roadmap enhances coherence and synergy in sustainability efforts across various governance levels. Key areas of focus include building and power supply sources, transportation, waste management, and community engagement. These sectors are crucial for reducing GHG emissions and improving efficiency in city operations.

Central to the roadmap are clear, measurable targets for emission reductions, providing a concrete framework to track progress. The plan includes thirteen strategies for municipal operations and five strategies for broader community engagement, ensuring comprehensive coverage of the city's sustainability goals. Immediate actions are designed to deliver rapid results, while long-term goals ensure sustained commitment to environmental responsibility through 2029 and beyond.

The success of the roadmap relies heavily on active collaboration with city officials, community stakeholders, and residents. Engaging these groups is crucial for the effective implementation of the sustainability strategies. Principles of transparency, accountability, and adaptability are embedded in the roadmap, ensuring ongoing assessment and adjustment of strategies as the sustainability landscape evolves. Looking forward, the next steps involve initiating the implementation of identified strategies within municipal operations, prioritizing those with the highest return on investment and immediate impact on GHG reductions. It is essential to enhance training and provide resources to city staff to ensure they are equipped to carry out the sustainability strategies effectively. Strengthening partnerships with regional and state agencies, local businesses, and community groups will support collaborative efforts and facilitate the sharing of best practices.

A robust monitoring and reporting system will need to be established to track the progress of each strategy, ensuring transparency and accountability. Regular updates will help keep the community informed and engaged. The city should remain adaptable to emerging technologies, policy changes, and evolving best practices in sustainability by periodically reviewing and updating the roadmap. Community engagement initiatives will be launched to raise awareness and encourage participation in sustainability efforts, including educational programs, public forums, and collaborative projects involving residents and businesses.

Regular evaluations will assess the effectiveness of implemented strategies, making necessary adjustments to optimize outcomes and ensure the roadmap remains aligned with the city's sustainability goals. By following these steps, the City of Deerfield Beach can effectively navigate towards its vision of a sustainable, low-carbon future, demonstrating leadership in environmental stewardship.

Personal Employee Actions

In the pursuit of fostering a sustainable and environmentally conscious community, sustainable practices start from within the municipality's operations. As such, active engagement and commitment from every employee are fundamental in driving meaningful change and achieving sustainability goals. This section delineates a comprehensive guide detailing personal actions that employees can undertake to contribute to the city's sustainability agenda on an individual level.

Energy Conservation:

Employees can play an active role in reducing energy consumption within their sphere of influence. This entails conscientiously switching off lights, computers, and other electronic devices when not in use, adjusting thermostats to energy-efficient settings, and advocating for the adoption of energy-saving measures within the workplace. Individuals can also install a solar thermal water heater or photovoltaic (PV) panels, purchase high-efficiency appliances, such as ENERGY STAR-rated washers or dishwashers, and switch to LEDs (Light Emitting Diodes) light bulbs.

Water Conservation:

Employees are urged to report and address water leaks promptly, adopt water-saving practices in their daily routines, and actively participate in water conservation awareness programs. Other sustainable practices include turning off the tap while brushing teeth, washing dishes, or shaving and installing water-saving devices like low-flow showerheads and faucet aerators. Employees can also collect and save rainwater from gutters to use to water plants.

Transportation and Commuting:

To mitigate greenhouse gas emissions and impacts, employees are encouraged to embrace sustainable transportation options such as purchasing an electric vehicle (EV), carpooling, biking, walking, or utilizing public transit whenever feasible. Additionally, exploring telecommuting or flexible work arrangements can help minimize the need for daily commuting, thereby reducing traffic congestion and emissions.

Waste Reduction and Recycling:

Employees are encouraged to minimize waste by choosing reusable products, recycling materials like paper, plastic, and glass, and composting organic waste. By segregating waste effectively and diverting recyclable and compostable materials from landfills, employees can significantly reduce the city's environmental footprint and promote a circular economy ethos. Additional sustainable practices that employees can embrace to reduce waste include opting for electronic billing and communication, using both sides of paper when printing, and avoiding single-use plastics.

Through the collective efforts of every employee, the City of Deerfield Beach can cultivate a culture of sustainability that transcends organizational boundaries and permeates every aspect of community life. By embracing these personal actions for sustainability, employees not only contribute to the realization of the City of Deerfield Beach's sustainability vision but also serve as catalysts for positive change within the city and beyond.

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APPENDIX A: Potential Funding Sources

The funding sources presented serve as potential matches for each strategy and offers a snapshot of programs captured in April 2024 using the Department of Housing and Urban Development's (HUD) aggregated database of federal funding programs. This serves as an initial list of grants organized by focus area; additional federal funding streams may be identified throughout the implementation process of the roadmap, or there could be changes to current funding streams. The lists of grants and programs are intended to be an initial overview of programs of potential interest to the City of Deerfield Beach, FL. After initial review, it is recommended that programs that may be of interest should be evaluated further in order to make final determinations of eligibility. All grant programs are linked to relevant pages to show program information which will guide the decision-making process.

Building and Power Supply Sources

Grant Program	Agency/ Office	Funding Stage	Eligible Uses	Where to Apply	Next Award Period
Environmental and Climate Justice Community Change Grants Program	US EPA, Office of Environmental Justice and External Civil Rights	NOFO or Application Open: rolling application until November 21, 2024	The project categories are those that result in reduced pollution, increased climate resiliency and lower carbon emissions. Workforce development is eligible.	See Environmental & Climate Justice Community Change Grants Program NOFO: https://www.epa.gov/system/files/documents/2024-02/community-change-grants-modified-nofo-2.12.24.pdf	2024
National Clean Investment Fund | US EPA	US EPA	Subaward funding will likely open during Summer 2024	Eligible use is to fund qualified project, activity or technology that either reduces or avoids greenhouse gas emissions or other forms of air pollution or assists communities to execute such project types.	3 selected organizations will release subaward information in the future. https://www.epa.gov/greenhouse-gas-reduction-fund/national-clean-investment-fund https://www.epa.gov/greenhouse-gas-reduction-fund/ncif-selected-applicant-details	2024
Community Development Block Grant	US Department of Housing and Urban Development (HUD)	NOFO or application open on ongoing basis	Eligible projects are housing, removal of blight, resiliency, infrastructure, economic development, workforce development and social services.	https://www.hudexchange.info/programs/cdbg/ list of CDBG formula level 1 grantees	Ongoing
Investment Tax Credit (ITC) for Renewables -- Tax-exempt entities are eligible	EPA	Guidance Published: Accepted annually to 2034	Eligible uses are solar and wind technologies, municipal solid waste, geothermal, tidal, energy storage, microgrid, fuel cells, combined heat & power, microturbines and interconnection.	https://www.law.cornell.edu/uscode/text/26/48E File with IRS: agency guidance: https://www.epa.gov/green-power-markets/summary-inflation-reduction-act-provisions-related-renewable-energy	Ongoing

Production Tax Credit (PTC) for Electricity from Renewables -- Tax-exempt entities are eligible	IRS	Guidance Published: Accepted annually to 2034	Eligible uses are solar and wind technologies, municipal solid waste, geothermal, tidal, energy storage, microgrid, fuel cells, combined heat & power, microturbines and interconnection.	https://www.law.cornell.edu/uscode/text/26/45W File with IRS: agency guidance: https://www.epa.gov/green-power-markets/summary-inflation-reduction-act-provisions-related-renewable-energy	Ongoing
Thriving Communities Grantmaking Program (EJ TCGM) Program	EPA	Funding Forecast for Summer 2024	Grantees will design and implement environmental justice programs in energy efficiency, resiliency, healthy housing, waste management, transport, workforce development and broadband access.	https://www.epa.gov/environmentaljustice/environmental-justice-thriving-communities-grantmaking-program Grantees to be awarded by the EPA	TBD
Communities Sparking Investment in Transformative Energy (C-SITE) -- grant within Local Government Energy Grant Program (LGEP)	US DOE, State and Community Energy Programs	NOFO Open until May 31, 2024 (2024 cycle)	Eligible uses include building efficiency and/or electrification, electric transportation, energy infrastructure upgrades, microgrid development and deployment, renewable energy, resilience hubs, and workforce development.	https://www.energy.gov/scep/local-government-energy-program LGEP NOFO: https://infrastructure-exchange.energy.gov/Default.aspx	2024
GRIP: Grid Innovation Program	DOE, Grid Deployment Office	NOFO Open - Applications due May 22, 2024	Eligible uses include broad projects that provide innovation to the electrical grid, such as improvement to transmission, distribution, and/or storage systems; responses to grid stressors such as increased demand, infrastructure needs, and weather events; and advances in project planning methodologies and organizational best practices.	https://www.energy.gov/gdo/grid-innovation-program See GRID Resilience & Innovative Partnerships (GRIP) NOFO: https://www.grants.gov/search-results-detail/350971?utm_source=substack&utm_medium=email	TBD
GRIP: Smart Grid Grants	DOE, Grid Deployment Office	NOFO Closed - Applications Due April 17, 2024	Eligible activities include using new devices, materials, engineering designs, or software tools to improve the electrical grid. There is specific interest in improving system capacity and flexibility, improving grid operators' ability to use data to effectively manage the grid, and removing	https://www.energy.gov/gdo/smart-grid-grants See GRID Resilience & Innovative Partnerships (GRIP) NOFO: https://www.grants.gov/search-results-detail/350971?utm_source=substack&utm_medium=email	TBD

			barriers to adopt innovative technology.		
Energy Efficiency Revolving Loan Fund	DOE, State and Community Energy Programs	NOFO or Application Open on ongoing basis	Eligible activities are residential and commercial energy audit, upgrades and retrofits.	https://www.energy.gov/scep/energy-efficiency-revolving-loan-fund-capitalization-grant-program See State energy office: https://www.naseo.org/members-states	TBD
FEMA Hazard Mitigation Grants	FEMA	TBD based on grant	Hazard mitigation includes long-term efforts to reduce risk and the potential impact of future disasters. HMGP assists communities in rebuilding in a better, stronger, and safer way in order to become more resilient overall.	https://www.fema.gov/grants/mitigation Resources for Applying to Hazard Mitigation Assistance Grants: https://www.fema.gov/grants/mitigation/applying	TBD

Transportation

Grant Program	Agency/ Office	Funding Stage	Eligible Uses	Where to Apply	Next Award Period
Environmental and Climate Justice Community Change Grants Program	US EPA, Office of Environmental Justice and External Civil Rights	NOFO or Application Open: rolling application until November 21, 2024	The project categories are those that result in reduced pollution, increased climate resiliency and lower carbon emissions. Workforce development is eligible.	https://www.epa.gov/system/files/documents/2024-02/community-change-grants-modified-nofo-2.12.24.pdf	TBD
Charging and Fueling Infrastructure Discretionary Grant Program	US DoT, Federal Highway Administration	Funding forecast in 2024	Acquisition and installation of publicly accessible electric vehicle charging or alternative fueling infrastructure, operating assistance for the first 5 years after installation, installation of traffic control devices.	https://www.fhwa.dot.gov/environment/cfi/ Agency will announce next funding round.	TBD
Alternative Fuel Vehicle Refueling Property Tax Credit	IRS	Guidance published; accepted annually until 2032	Eligible use is infrastructure for refueling property for clean burning fuels, as defined in the statute, located in low-income or rural areas.	https://www.irs.gov/credits-deductions/alternative-fuel-vehicle-refueling-property-credit File w IRS	Ongoing
Charging & Fueling Infrastructure Grants (through FDOT)	Florida Department of Transportation	Funding forecast in 2024	Acquisition and installation of publicly accessible electric vehicle charging or alternative fueling infrastructure, operating assistance for the first 5 years after installation,	https://www.fdot.gov/emergingtechnologies/home/evprogram/funding Agency will announce next funding round.	TBD

			installation of traffic control devices.		
Community Development Block Grant	US Department of Housing and Urban Development (HUD)	NOFO or application open on ongoing basis	Eligible projects are housing, removal of blight, resiliency, infrastructure, economic development, workforce development and social services.	https://www.hudexchange.info/programs/cdbg/ list of CDBG formula level 1 grantees	Ongoing
Credit for Qualified Commercial Clean Vehicles Tax Credit	IRS	Guidance published: pre-filing due 120 days before full tax return	Eligible expense is the purchase of qualified commercial clean vehicle(s). The credit is capped at $7,500 for vehicles < 14,000 lbs. and $40,000 for all other clean vehicles.	https://www.law.cornell.edu/uscode/text/26/45W File with IRS: https://www.irs.gov/newsroom/frequently-asked-questions-about-the-new-previously-owned-and-qualified-commercial-clean-vehicles-credit	Ongoing
Diesel Emissions Reduction Act Program (DERA)	EPA	2022-2023 NOFO Closed	Eligible activities include the retrofit or replacement of existing diesel engines, vehicles and equipment with EPA and California Air Resources Board (CARB) certified engine configurations and verified retrofit and idle reduction technologies.	https://www.epa.gov/dera Application Info: https://www.epa.gov/dera/national#Application-Docs	TBD
National Electric Vehicle Infrastructure (NEVI)	US DoT, Federal Highway Administration	Agency allocates by formula to state.	The acquisition and installation of electric vehicle charging infrastructure that is open to the public or to authorized commercial motor vehicle operators from more than one company.	https://www.fhwa.dot.gov/bipartisan-infrastructure-law/nevi_formula_program.cfm See state transportation office: https://www.fhwa.dot.gov/about/webstate.cfm	TBD

Waste

Grant Program	Agency/ Office	Funding Stage	Eligible Uses	Where to Apply	Next Award Period
Thriving Communities Grantmaking Program (EJ TCGM) Program	EPA	Funding Forecast for Summer 2024	Grantees will design and implement environmental justice programs in energy efficiency, resiliency, healthy housing, waste management, transport, workforce development and broadband access.	https://www.epa.gov/environmentaljustice/environmental-justice-thriving-communities-grantmaking-program Grantees to be awarded by the EPA	TBD

Solid Waste Infrastructure for Recycling Infrastructure Grants (Local)	EPA	NOFO or Application Not Open, closed Feb 15, 2023	Eligible activities implement environmentally sound post-consumer material management, management infrastructure, diversion or data collection and planning.	https://www.epa.gov/infrastructure/solid-waste-infrastructure-recycling-grants-political-subdivisions https://www.epa.gov/infrastructure/solid-waste-infrastructure-recycling-grant-program#selectees	TBD
Consumer Recycling Education and Outreach Grant Program	US EPA	Funding Forecasted in November 2023	Eligible activities include community outreach and activities that lead to increased collection rates and decreased contamination rates of recyclables.	https://www.epa.gov/infrastructure/consumer-recycling-education-and-outreach-grant-program#overview Agency will announce next funding round.	TBD
Community Development Block Grant	US Department of Housing and Urban Development (HUD)	NOFO or application open on ongoing basis	Eligible projects are housing, removal of blight, resiliency, infrastructure, economic development, workforce development and social services.	https://www.hudexchange.info/programs/cdbg/ list of CDBG formula level 1 grantees	TBD
Consumer Battery Recycling Program	US DOE Office of Manufacturing and Energy Supply Chains	NOFO not open; closed November 29, 2023	The eligible programs are those that increase consumer participation rates in recycling consumer electronic batteries, improve the economics of battery recycling, or are state, local and retail battery recycling programs.	https://www.energy.gov/mesc/battery-and-critical-mineral-recycling See agency: https://eere-exchange.energy.gov/Default.aspx?utm_medium=email&utm_source=govdelivery	Ongoing
ITC and PTC Tax Credits	DOE	Ongoing	Clean/no-emissions waste to energy projects	https://www.energy.gov/eere/solar/federal-solar-tax-credits-businesses https://home.treasury.gov/news/press-releases/jy1477	TBD
Emerging Contaminants in Small or Disadvantaged Communities	EPA	Agency allocates to projects	Eligible activities are technical assistance to evaluate emerging contaminants, water-quality testing, including testing for unregulated contaminants, local contractor training, activities necessary for a state to respond to an emerging contaminant.	https://www.epa.gov/dwcapacity/emerging-contaminants-ec-small-or-disadvantaged-communities-grant-sdc	Ongoing
Energy Efficiency & Conservation Block Grant Program	DOE	NOFO or application not open, closed August 21, 2023	Eligible uses include clean energy, energy audits, building retrofits, conservation programs and EV infrastructure. See; https://www.energy.gov/scep/articles/energy-efficiency-and-	https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program-competitive-funding-announcement	TBD

			conservation-block-grant-eligible-activities-and-program		
Environmental and Climate Justice Community Change Grants Program	US EPA, Office of Environmental Justice and External Civil Rights	NOFO or Application Open: rolling application until November 21, 2024	The project categories are those that result in reduced pollution, increased climate resiliency and lower carbon emissions. Workforce development is eligible.	https://www.epa.gov/system/files/documents/2024-02/community-change-grants-modified-nofo-2.12.24.pdf See Environmental & Climate Justice Community Change Grants Program NOFO: grants.gov	TBD
Government-to-Government (EJG2G) Program	EPA	NOFO or application not open, closed April 14, 2023	Eligible activities support a wide range of energy, resiliency, workforce development and environmental justice projects.	https://www.epa.gov/environmentaljustice/environmental-justice-government-government-program See environmental justice gov-to-gov program NOFO: https://www.grants.gov/search-results-detail/345311	TBD
Greenhouse Gas Reduction Fund	EPA	Depends on the grant within the GHG Reduction Fund	Eligible uses are community financing programs for emissions reduction projects in low-income communities. Categories can be clean energy, energy efficiency, clean transport, energy efficient affordable housing and green workforce development.	https://www.epa.gov/greenhouse-gas-reduction-fund	TBD

Community

Grant Program	Agency/Office	Funding Stage	Eligible Uses	Where to Apply	Next Award Period
Environmental and Climate Justice Community Change Grants Program	US EPA, Office of Environmental Justice and External Civil Rights		A partnership between a community-based nonprofit organization (CBO) and local gov't	https://www.epa.gov/system/files/documents/2024-02/community-change-grants-modified-nofo-2.12.24.pdf	TBD
FEMA Hazard Mitigation Grants	FEMA	TBD based on grant	Hazard mitigation includes long-term efforts to reduce risk and the potential impact of future disasters. HMGP assists communities in rebuilding in a better, stronger, and safer way in order to become more resilient overall. The grant program can fund a wide variety of mitigation projects.	https://www.fema.gov/grants/mitigation https://www.fema.gov/grants/mitigation/applying	TBD

Clean Water State Revolving Fund (CWSRF)	Florida DEP	Ongoing	Planning loans, design loans, and construction loans	https://floridadep.gov/wra/srf/content/cwsrf-program	TBD
Green Infrastructure Funding	EPA	TBD based on grant	Many uses; depends on grant	https://www.epa.gov/green-infrastructure/green-infrastructure-funding-opportunities	TBD
Climate Pollution Reduction Grants (CPRG)	EPA	TBD	Planning grant recipients are using the funding to design climate action plans that incorporate a variety of measures to reduce GHG emissions from across their economies in six key sectors (electricity generation, industry, transportation, buildings, agriculture/natural and working lands, and waste management).	https://www.epa.gov/newsreleases/biden-harris-administration-announces-availability-46-billion-competitive-grants-cut https://www.usdn.org/projects/cprg-tool-and-resource-library.html	TBD
Arbor Day Foundation	N/A	Recommended that Deerfield Beach partners with the Arbor Day Foundation for funding as it pursues its C-4 plans.			