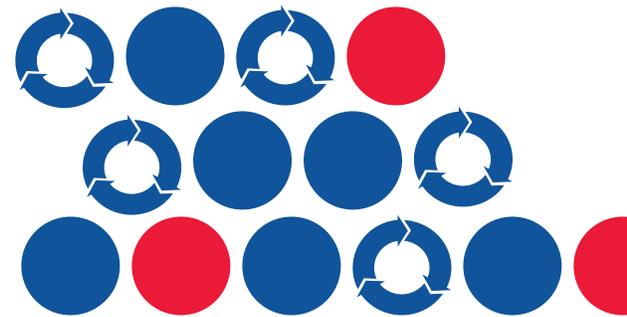


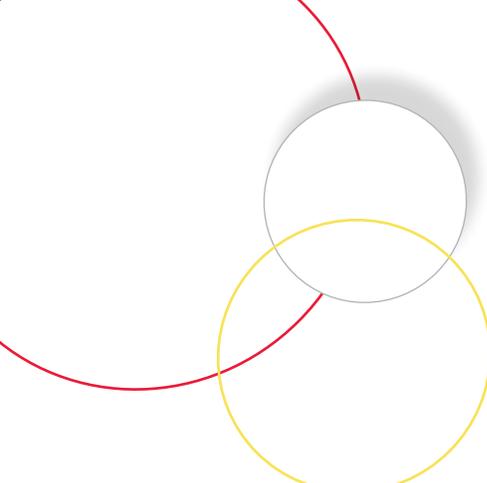


PINELLAS COUNTY, FL

# Solid Waste Master Plan



**Zero Waste to Landfill**  
February 2020

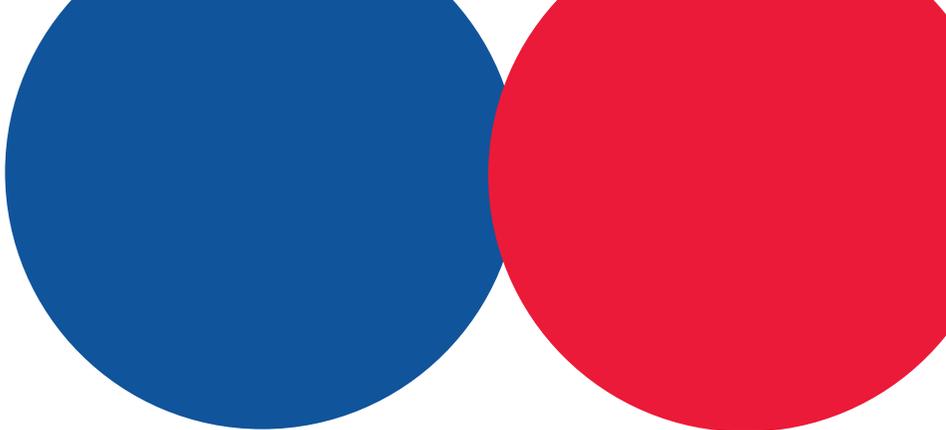


**Pinellas County Master Plan (February 2020)**  
**In partnership with:**



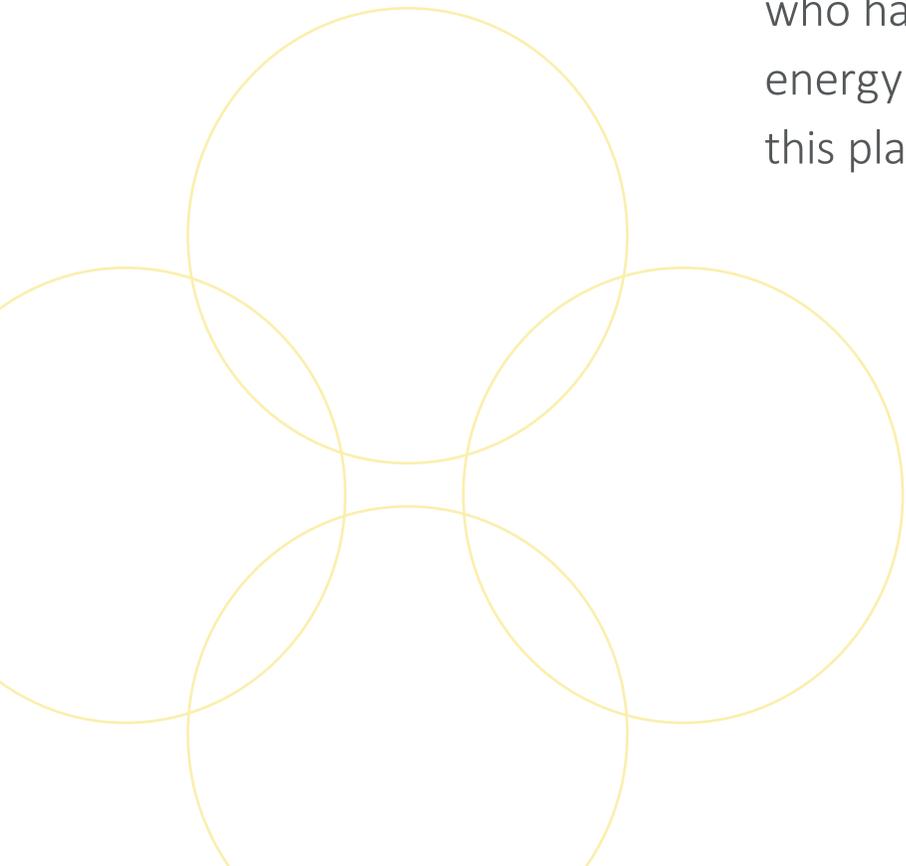
**IWCS, LLC, QUEST AND SOLID WASTE ASSOCIATES (SWA)**





## **acknowledgements**

Pinellas County Solid Waste staff and its consultant, the HDR Team (including HDR Engineering, Inc., NewGen Strategies & Solutions, LLC, Solid Waste Associates, LLC, Innovative Waste Consulting Services, LLC, and Quest Corporation of America), would like to thank the following stakeholders who have provided their time, energy and input into helping make this planning process a success.



# Thank You



We appreciate the over **875 Pinellas County Residents** that donated their time to share their views through our Online Survey in January and February and the over **100 residents** who attended our series of Public Workshops held in April and May.



## PARTNERS

### Pinellas County Regional Sub-Committee Members

**City of Treasure Island** / Stacey Boyles, Assistant Director of Public Works • **City of St. Petersburg** / Jack Crooks, Environmental Service Coordinator • **City of Clearwater** / Earl Gloster, Director of Solid Waste and General Services • **USF Grad Student** / Dana Lazarus • **City of Dunedin** / William Pickrum, Solid Waste Division Director

### Greater Tampa Bay Regional Partners

**Hillsborough County** / Kim Byer, Solid Waste Division Director • Travis Barnes, Recycling Coordinator  
**Manatee County** / Robert Shankle, Solid Waste Division Manager • Jeanne Detweiler, Superintendent Recycling/Enforcement/Business Ops • Bryan White, Superintendent Operation  
**Pasco County** / Justin Roessler, Assistant Solid Waste Director, **Sarasota County** / Larry Alexander, Solid Waste Division Manager • Jason Timmons, Solid Waste Engineer • Kristina King, Business Manager  
**City of Tampa** / Adriana Colina, Chief of Administration • Chris Eckert, Engineer III • Jonathan Kane, Audit & Contracts Supervisor • Jason Milton, Interim Recycling Coordinator • Edgar Castro Tello, Recycling Specialist

### Hauler Survey Participants

D&D Hauling, Inc. • Solar Sanitation • Superior Trash Services, Inc. • Waste Connections of Pinellas County • Waste Management, Inc. • Waste Pro of Florida, Inc.

### Staff

The HDR Team would like to expressly thank the **Pinellas County Solid Waste staff** for their tireless dedication to the planning process and to providing the residents and businesses of Pinellas County with a sustainable, economical, and resilient solid waste management program that has consistently ranked among the top counties in the state.

Special thanks to key members from other County Departments that provided critical support, including Marketing and Communications • Office of Management and Budget.

### ...And

A very special thank you to the Pinellas County Board of County Commissioners and County Administration for their forward-thinking insight to encourage a thirty-year solid waste master plan allowing the Pinellas County Department of Solid Waste to continue to responsibly manage waste as a resource for the next generation.

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# A note from the Director

## The Path to Zero Waste to Landfill

Pinellas County is dedicated to providing first-class Municipal Solid Waste Management System service to all of its citizenry, businesses and visitors. The foresight of previous county leadership resulted in the legislative creation of an integrated solid waste management system including a Waste-to-Energy (WTE) facility as primary disposal method, as opposed to traditional landfilling. Today, county leadership recognizes landfill life as a precious resource, because the opportunity to expand is not easily achieved due to neighborhood/business community encroachment and strict permitting regulations.

Pinellas County is seen as a municipal solid waste management industry leader. The WTE Facility remains one of the largest operating in the country. Currently WTE is, by far, the most effective alternative to landfill disposal, while generating a revenue stream that funds the entire solid waste management system operation and reserves for future capital projects. Reserves are currently being reinvested in the WTE Facility to renovate and restore it to like-new operating capacity and extend its life an additional 25 years. Additionally, for the past 30 years, disposal rate fees have been held constant. The integrated solid waste management system includes: WTE Facility, landfill, and leachate and surface water treatment operations, free mobile collections and disposal of household electronics and chemicals for residents, Business Waste Assessment and Cutting Waste at Work programs for businesses, collection services in the Lealman community, free recycling drop off locations, and extensive outreach and education programs.

For the last several years, Pinellas County has ranked amongst the leaders in traditional recycling rate within the State, averaging between 50-55%. In addition to the environmental benefits, recycling also minimizes solid waste disposal volume. Any reduction in recycling would result in exceeding WTE Facility capacity and increased landfilling. If recycling was stopped entirely, landfill life would be reduced by 25 years.

Building upon past and current leadership, it is time to look to the future. This 30-year Master Plan is focused on a vision of one primary goal, "Zero Waste to Landfill". As you will read and discover, the journey leading toward that goal must be a regional approach including; input from many different stakeholders, the evaluation of current and future technologies, availability and capacity of end material markets, public outreach and education, and changes to existing policies. This input is critical for the development of recommended strategies, which consider social, environmental and financial components of a 'Quality of Place'. When combined, these strategies will create a closed loop system where the community will minimize generation, maximize recycling and diversion, maximize recovery, and responsibly manage leftovers. Change is never easy, but as these strategies are implemented, together we will facilitate lifelong improvements into a comprehensive solid waste management system and achieve the "Zero Waste to Landfill" goal. I invite you to be part of this vision. The effort will require county-wide acceptance and participation. Only in partnership will the result end with the greatest impact to our future community.



**Paul Sacco**  
**Department of Solid Waste Director**



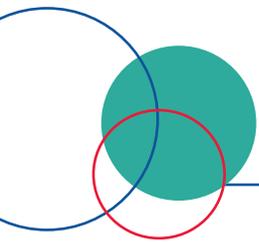
## SECTION 1 where we are today

“ Pinellas County Government is committed to progressive public policy, superior public service, courteous public contact, judicious exercise of authority, and responsible management of public resources to meet the needs and concerns of our citizens today and tomorrow.”

- Pinellas County Mission

# Planning Purpose

The Department of Solid Waste, an operating department of Pinellas County Government (County), has embarked upon preparing a 30-year Solid Waste Master Plan (Plan) to evaluate the current solid waste system and identify activities, programs, facilities and technologies that will best support sustainable solid waste management consistent with the Pinellas County Strategic Plan's Mission, Vision, and Values. This Plan will serve as the guide for solid waste operations and program development to meet the future solid waste management needs of the County in the short (through 2024), intermediate (2025 through 2033) and long (2034 through 2048) terms. Pinellas County has in place a robust integrated solid waste management system that is one of the best in the country. The existing infrastructure and programs include many of the major elements that one would hope to find in a 21st century integrated waste management program. This Plan builds on the County's successes to date and positions the County to provide sustainable waste solutions for the next 30+ years.



Pinellas County is committed to the values established in its Strategic Plan.

Deliver First Class Services to the Public and Our Customers

Practice Superior Environmental Stewardship

RESPONSIBLE RESOURCE MANAGEMENT

# Values

GOALS & STRATEGIES

Foster Continual Economic Growth and Vitality

# Respectful Engagement

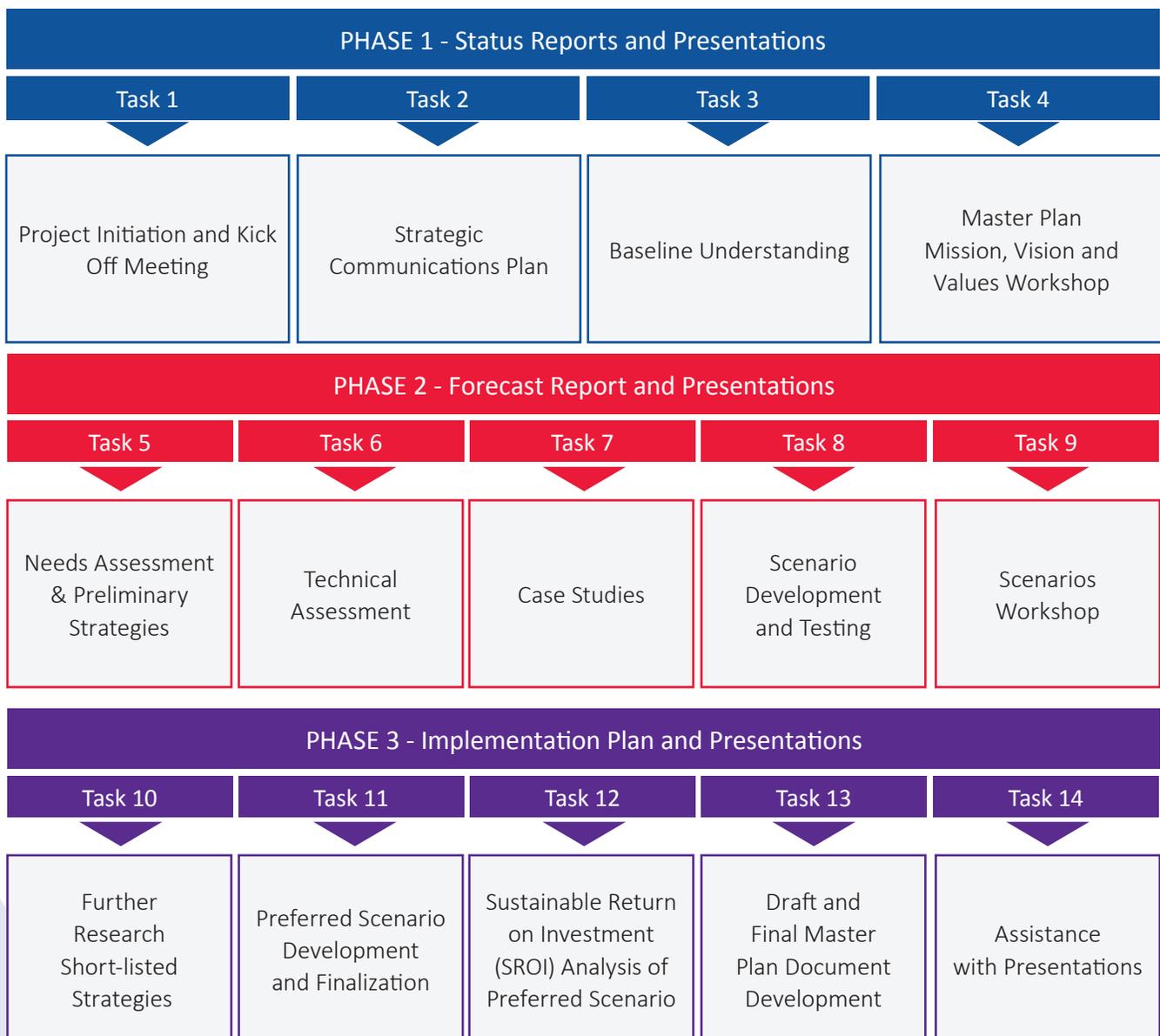
ENSURE PUBLIC HEALTH, SAFETY AND WELFARE

Create a Quality Workforce in a Positive, Supportive Organization



# Planning Process

The planning process included three phases. **Phase 1** focused on laying the groundwork for assessing current conditions and determining the vision for the future. **Phase 2** focused on assessing needs and opportunities, and identifying and assessing potential strategies for efficiency, effectiveness, cost-benefit, environmental and social impacts. **Phase 3** focused on narrowing down the list of potential strategies to those most viable for the County and determining implementation and monitoring steps for inclusion in the Plan.



# Communications and Outreach

The purpose of the communications plan and the public participation process was to support the development of the Plan with a comprehensive communications and outreach program that offered opportunities for residents, businesses and other stakeholders to help prioritize policies and programs for solid waste management. This communications plan provided guidance for the County to communicate, gather input and inform stakeholders about waste management, recycling and diversion, solid waste operations, solid waste disposal, and the planning process throughout the master planning process. In order to inform and obtain feedback from stakeholders, including the general public, a variety of tools for communication and outreach were used.

## The communication goals were to:

- Facilitate stakeholder engagement throughout the planning process;
- Provide a variety of options for receiving input from the general public and other stakeholders;
- Build community support and leverage County resources; and
- Broaden participation for diverse feedback and perspective.

## The communications plan was organized around several key project milestones, including:

- Seeking feedback and reviewing results from pre-planned workshops with the project team members;
- Activating stakeholder surveys, as determined appropriate;
- Identifying needs and communicating key findings;
- Seeking additional feedback from stakeholders through additional survey efforts; and
- Finalizing strategies for inclusion in the Plan.

## Key Elements of the Communication Plan



### Solid Waste Master Plan Webpage

A dedicated Solid Waste Master Plan webpage accessible from the County's Solid Waste webpage was developed. The master plan webpage was used to provide background information and updates as we moved through the planning process. The webpage also allowed stakeholders to provide feedback through a dedicated master plan email address, and informed stakeholders of other feedback opportunities like the online survey and the public workshops. Presentations and Reports are available on the [webpage](#) including:

- Baseline Understanding
- Construction and Demolition Debris Report
- Market Assessment
- Needs Assessment
- Organics Report
- Solid Waste Master Plan Public Meeting Presentation and Summary
- Online Customer Survey Response Summary
- Hauler Interviews Summary
- Case Studies
- Technology Assessment
- Summary of May 13th, 2019 Regional Sub-Committee Workshop
- Scenario Development
- SROI Analysis of Preferred Scenario
- Master Plan



## Regional Sub-committee

A Regional Sub-committee, made up of representatives from some of the municipalities and other community leaders and representatives within the County and representatives from neighboring counties, was formed at the beginning of the planning process to weigh in on the vision, values and goals for the Plan as well as specific strategies to include in the Plan.



## Online Customer Survey

An Online Customer Survey was developed and made available through the County's website to gauge opinions on the current solid waste management system and potential future programs. Social media was used to help promote the online survey, along with County staff promoting it at public engagements. A total of 878 people participated in the online survey.



## Hauler Interviews

Hauler interviews were conducted with the licensed haulers for the unincorporated areas to gauge their opinions on improving collection services. Attempts to interview all eight of the currently licensed haulers were made. Three of the currently licensed haulers are considered to be national haulers and five are considered to be local (independent) haulers. Interviews were completed with six of the eight licensed haulers.



## Public Workshops

Public Workshops were held in three different locations around the County. The workshops were promoted on the master plan webpage, through press releases, and through social media. Over 50 people attended the workshop held in **Gulfport**, over 30 people attended the workshop held in **Largo**, and over 20 people attended the workshop held in **Palm Harbor**.



Take the survey for the  
30-year Solid Waste  
Master Plan.

**Get involved!**  
Your feedback is important.

Visit the link below to share your feedback on the County's solid waste management services and processes.

[www.pinellascounty.org/solidwaste/masterplan](http://www.pinellascounty.org/solidwaste/masterplan)  
Email: [solidwasteplan@pinellascounty.org](mailto:solidwasteplan@pinellascounty.org)

[y.com/r/pinellascountymasterplan](https://www.com/r/pinellascountymasterplan)

[@PinellasCotNews](https://twitter.com/PinellasCotNews) [@pinellascounty](https://www.instagram.com/pinellascounty)

# Current System Overview

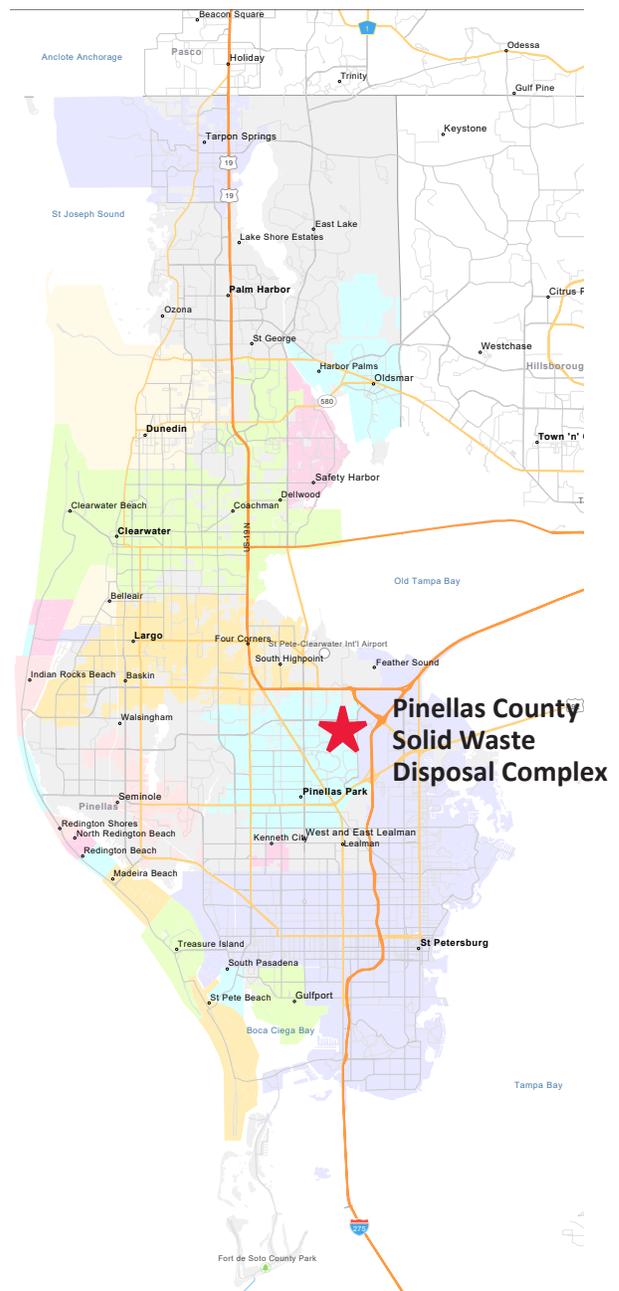
## Our Partners

Pinellas County, along with all 24 municipal partners, participate in the solid waste system. In all, the County's service area, shown in **Figure 1** covers approximately 274 square miles. In 2017, there was an estimated permanent population of 968,279 in Pinellas County, with 71% residing in the incorporated areas and 29% residing in the unincorporated areas. The tourist population was estimated at 6,260,124 in 2017 with an average duration of a 5.6 day stay, which equates to an annual equivalent tourist population of 96,046. The seasonal population was estimated at 80,313 in 2017, which equates to an annual equivalent population of 33,464. The permanent, seasonal and tourist population combined accounted for over 1,200,000 tons of waste received at the Pinellas County Solid Waste Disposal Complex (Complex).

The 24 municipalities manage their solid waste programs independently with all waste collected by the municipalities, or their franchised haulers, delivered to the Complex. Collection of residential recyclables is also managed by each municipality and in some cases include processing outside of the County.

Commercial and Construction & Demolition (C&D) debris waste streams are handled through an open market, competitive process for collection within each of the municipalities and the unincorporated areas in Pinellas County.

**Figure 1. Pinellas County**



## Current Municipal Practices

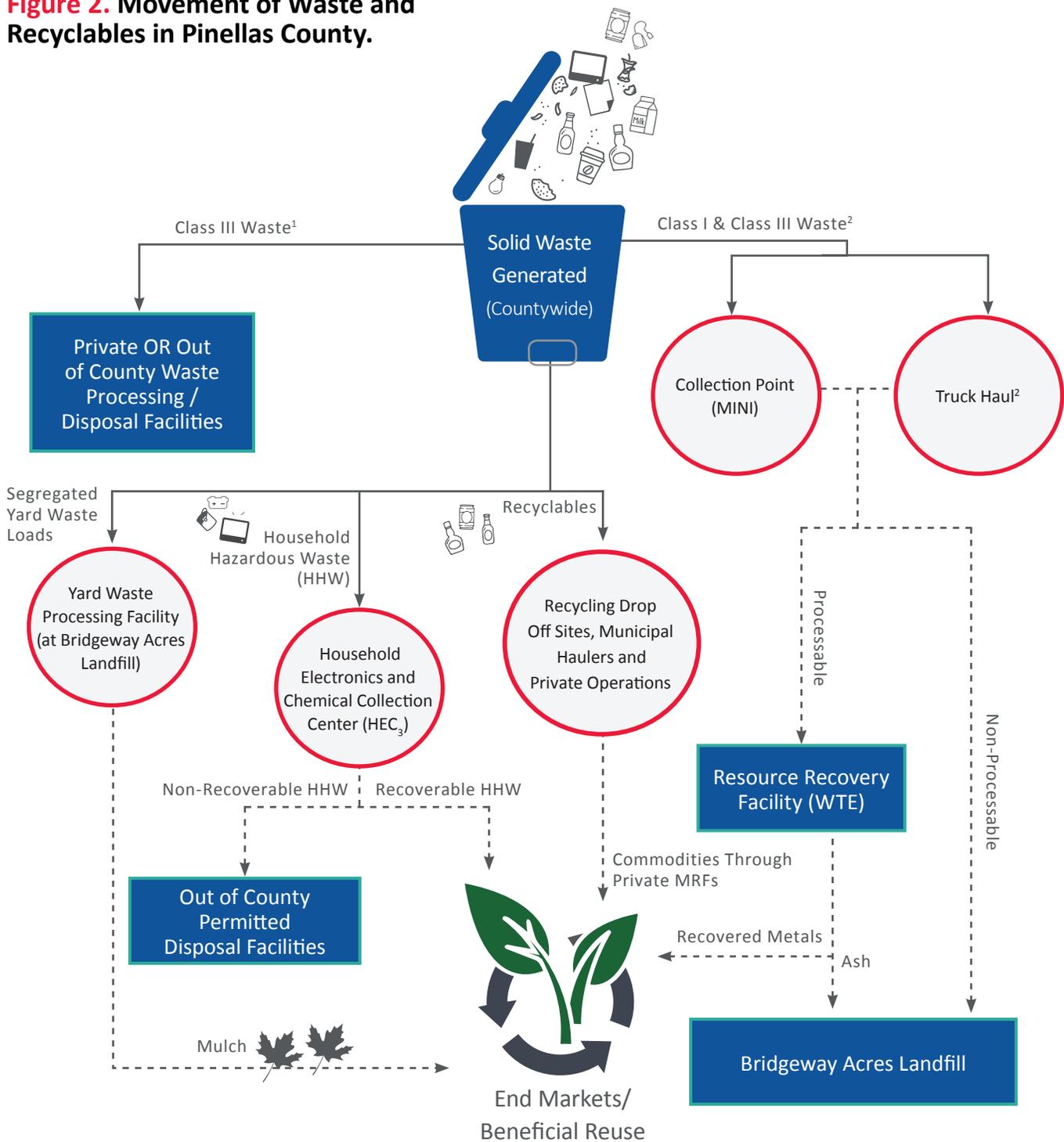
The 24 municipalities vary in how they manage the various collection services for materials such as solid waste, recycling, bulky materials, yard waste and C&D debris at single family and multifamily properties. In some cases the municipality has contracted a particular service and for others they self-perform or a blend of the two. As an example, the City of Madeira Beach self-performs collection of solid waste and yard waste but contracts collection and processing of recyclables to a private sector provider. In comparison, the City of Largo self-performs all collection services and the Town of Redington Beach outsources all services. Curbside services may be manual with customer provided cans or automated collections with provider-supplied carts for solid waste and recycling all solid waste delivered to the Complex throughout county. All solid waste collected in the incorporated areas of the County is required to be delivered to the Complex.

## Unincorporated Areas

The County requires licensed haulers in the unincorporated areas to offer non-mandatory curbside residential recycling services for a fee. Recycling Commercial collection services are not subject to the licensing procedures and is an open market system in the unincorporated areas. Solid waste collected in the unincorporated areas of the County is required to be delivered to the Complex.

Residential collection in the unincorporated areas is administered under Pinellas County Ordinance through a franchise agreement for the Lealman Municipal Services Benefit Unit (MSBU) and by the hauler licensing procedure for the remaining unincorporated areas of the County.

**Figure 2. Movement of Waste and Recyclables in Pinellas County.**



<sup>1</sup>Some Class I and Class III waste generated within the County is disposed out of County. In 2017, 19,018 tons of Class I (of which 12,421 tons were contaminated soil) and 215,849 tons of Class III waste left the County for disposal.

<sup>2</sup>Municipal, and franchised or licensed haulers bring Class I and Class III waste to the Complex, and processable waste is processed through the WTE. Non-processable waste is routed to the Landfill.



Solid Waste Master Plan  
**SECTION 1. WHERE WE ARE TODAY**



## Pinellas County Solid Waste Complex

### 1. Waste-to-Energy Facility

The County-owned Waste-to-Energy (WTE) began operations in 1983 and is located on 15 acres within the Complex. The County contracts with a private firm for the WTE day-to-day operations with a current contract term of December 2014 to December 2024 and two potential 5-year extensions. The designed capacity of the facility can process up to 3,150 tons per day of solid waste while generating 75 megawatts of renewable electrical energy. Metal recovery operations from the ash are accomplished by the utilization of magnets and eddy currents. This facility processed nearly 800,000 tons of waste in 2017.

Adjacent to the WTE is the Industrial Water Treatment Facility that is a three million gallon per day industrial water treatment plant that treats water from an on-site retention pond fed by surface water canals and an underdrain system.

### 2. Collection Point (MINI)

The County owns and operates the Collection Point (MINI) for use by residents with passenger vehicles, pickup trucks, vans and small box trucks for hand unloading of materials which once collected are moved to the appropriate area of the Complex for recycling, processing or disposal.

### 3. Bridgeway Acres Landfill

The Bridgeway Acres Landfill is owned by the County and is located on 497 acres within the Complex. The County contracts with a private entity for operations of the landfill except for the tire processing operations that are performed by County staff.

The Landfill area consists of the Class I Landfill, which receives ash from the WTE for disposal, large items and other wastes that cannot be handled through the WTE and waste that is bypassed during WTE maintenance periods. Additionally, portions of the landfill include designated disposal areas for non-processable waste. The landfill has approximately 84 years of projected capacity based on the Annual Remaining Site Life and Capacity Report completed in April 2018. The County has beneficially used 135,000 tons annually of ash as a daily cover for the landfill.

The Yard Waste Processing Area receives clean yard and vegetative waste and is operated by a subcontractor. Processed mulch is provided free of charge to customers.

The County owns and operates the tire processing facility. Tires are directed to the separate, designated area for size reduction prior to disposal at the WTE.

### 4. Recycling Drop-Off Sites

The County owns and operates the Recycling Drop Off Center at the Complex where residents can drop off cardboard, paper, plastic and glass containers and aluminum and steel cans for recycling.

In addition to the Recycling Drop Off Center located at the Complex, there are 25 Beach and Park Recycling Locations and 15 Collection Centers countywide which provide Pinellas County residents with additional recycling options. These facilities were responsible for collecting 1,700 tons of materials for recycling in 2017.

### 5. Household Electronics and Chemical Collection Center

The County owns and operates the Household Electronics and Chemical Collection Center (HEC<sub>3</sub>) which collects unwanted household electronics and chemical wastes at no charge. Certain processable waste materials are taken to the WTE facility with the remainder of the collected electronic waste and chemicals disposed through private vendor contracts. The HEC<sub>3</sub> facility recycled 1.4 million pounds of household electronics, and 288,000 pounds of household chemicals in 2017. It also provided 219,000 pounds annually of partially used chemicals for reuse by residents for free at the Swap Shop.

**Figure 3. Aggregate MSW Composition Delivered to the Complex (from 2014 Waste Characterization)**

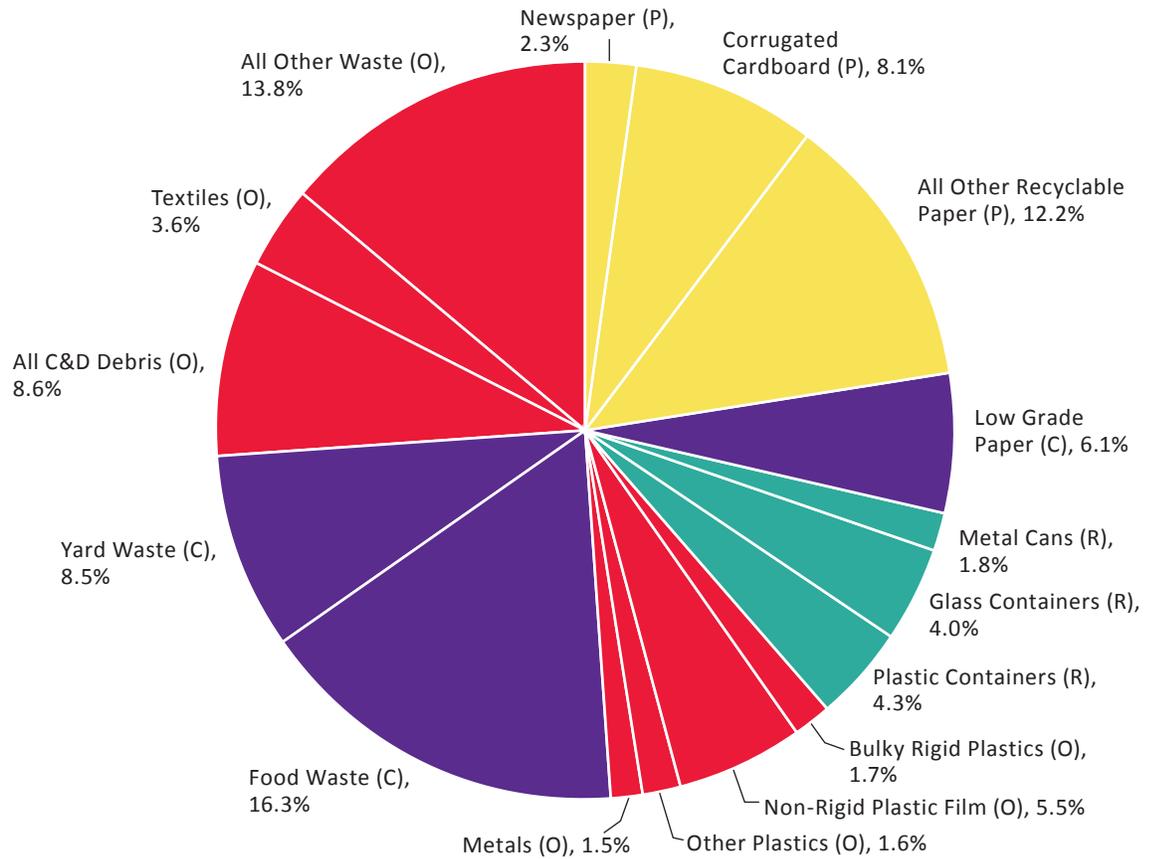
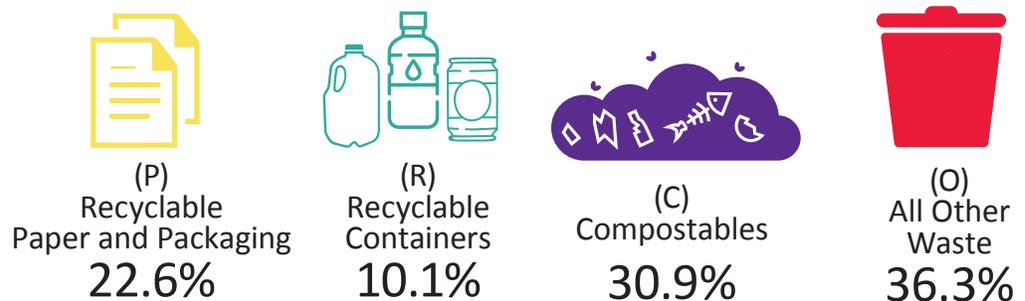
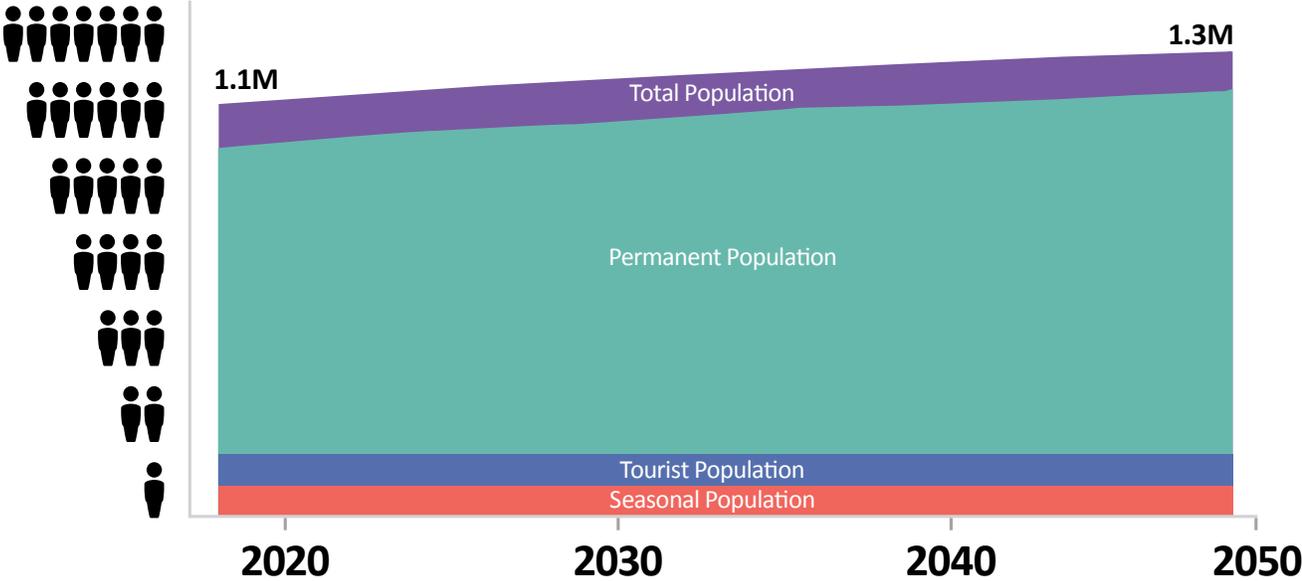


Figure 3 shows that nearly 64% of material delivered to the Complex could be recycled or composted which is demonstrated by the following categories.



# Population

With its 24 municipalities, a large portion of Pinellas County has been built out which restricts significant long term growth. The County is a popular tourist destination and experiences seasonal and tourist population increases during the winter months. Combined, the current population in the County is approximately 1.1 million people, adjusted for seasonal and tourist impacts. The population is expected to grow at less than 0.5% per year for a total adjusted population in 2048 of approximately 1.3 million people.



## Waste Generation

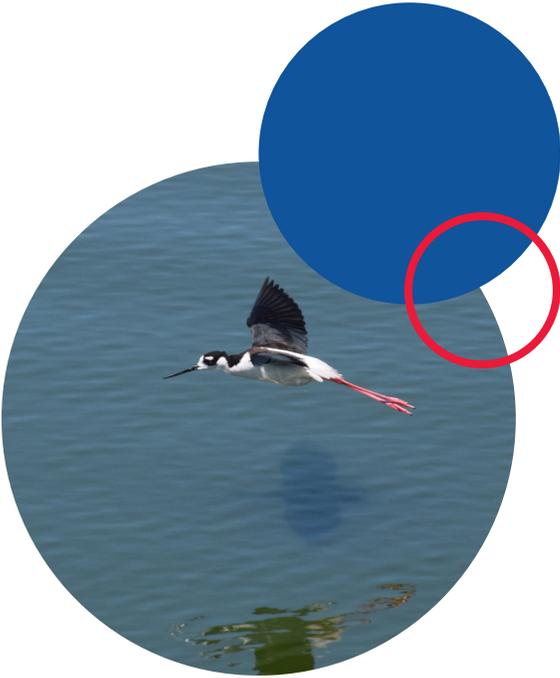
Each resident in Pinellas County generates approximately 12.16 pounds of waste per day. Comparatively, other counties in the region generate 9.64 (Hillsborough), 9.12 (Pasco) and 12.23 (Manatee). In 2018, this corresponded to over 2.15 million tons of waste. Pinellas County Solid Waste has historically managed 55% to 60% of the total waste generated county-wide at the Complex. In 2017, this equaled 1.1 million tons. At these generation rates, the County is anticipated to need to manage at least 1.35 million tons out of the 2.5 million tons generated in 2048.

Waste is generated at single family homes, multifamily residential units, and commercial businesses which includes C&D debris. Of these generating sectors, commercial generates about 53% of the total waste generated while single family residential and multi family residential 30% and 17%, respectively. Recycling from all three sectors eliminated almost 1.2 million tons from disposal. Continued recycling at this rate will see almost 1.25 million tons diverted from disposal in 2048.



### **Bridgeway Acres Landfill, 2102**

If Pinellas County residents were to stop supporting recycling programs today (2019), the capacity of the landfill would decrease from 83 to 58 years.



## Collection Services

While most municipalities manage their own waste and recycling collections, with the exception of the Lealman area, unincorporated areas rely on multiple licensed haulers to perform these duties. Waste and recycling collection is optional with the ability to self-haul waste and recyclables should a resident choose not to have curbside service.

Inconsistent collection services in the unincorporated areas can cause confusion amongst residents which can lead to increased contamination in recyclables. There is room for improvement in the quality of recyclables collected and the availability of services. Higher rates of recycling will divert more material from the Complex for a Material Recovery Facility (MRF) to process.

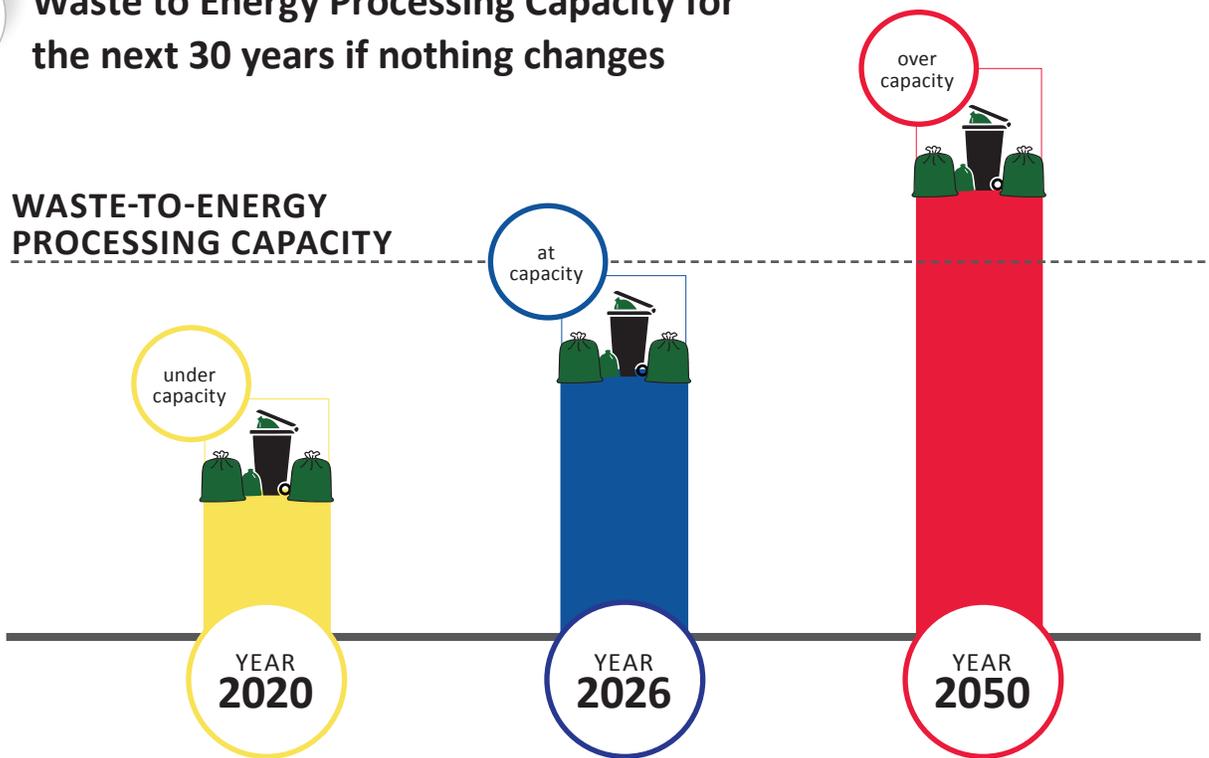


**SECTION 1. WHERE WE ARE TODAY**

## Processing and Disposal

Presently, the County uses the WTE to process the majority of waste received and managed by the County. In addition to the ash generated from the WTE facility, some materials, due to their size, need to be disposed in the Bridgeway Acres landfill. Other waste (bulky waste) is diverted from the WTE when routine and non-routine maintenance is performed. The WTE facility is rated for 3,150 tons per day. Given operational variables, maintenance schedules and variations in the waste, the typical plant performance is between 2,800 and 3,000 tons per day, averaged annually. This yields just over 1.0 million tons that can be managed annually leaving over 100,000 tons that have to be landfilled in 2048 (2.5 million tons generated less 1.4 million tons recycled). Given these constraints, the Bridgeway Acres landfill is estimated to have 83 years of remaining life, starting in 2019.

### Waste to Energy Processing Capacity for the next 30 years if nothing changes



As it stands, 32.7% of waste delivered to the Complex is traditional recyclables (paper and containers). Another 31% is comprised of compostable materials including yard waste, food scraps and compostable paper. This represents 396,000 tons and 372,000 tons respectively that could be diverted from being disposed and would free up additional future capacity for the WTE facility.

Construction and Demolition debris is principally managed by the private marketplace. Much of this material is recycled including concrete and steel that have readily available markets and contributes to the County's strong recycling rate. Of this material, over 200,000 tons was disposed in facilities outside the County.



## SECTION 2

where we want to be

"Pinellas County Solid Waste is committed to providing dependable, accessible, and sustainable integrated solid waste management systems for the region in a collaborative manner, with visionary leadership to responsibly manage waste as a resource for the long term."

- Solid Waste Master Plan Vision

# Vision, Values and Goal for the Master Plan

Working with our Regional Sub-committee Partners, a Vision and five core Values, and our Goal were developed for the integrated solid waste management system.

## Our Vision

To provide dependable, accessible, and sustainable integrated solid waste management systems for the region in a collaborative manner, with visionary leadership to responsibly manage waste as a resource for the long term.

## Our Values

We will inspire conscious design making and thoughtful consumption.

We will anticipate future needs.

We will balance environmental, economic, and social sustainability.

We will seek regional cooperation and collaboration.

We will increase operational capacity.



## Our Goal

The Goal of the Plan is to put zero waste into our landfill.





## SECTION 3

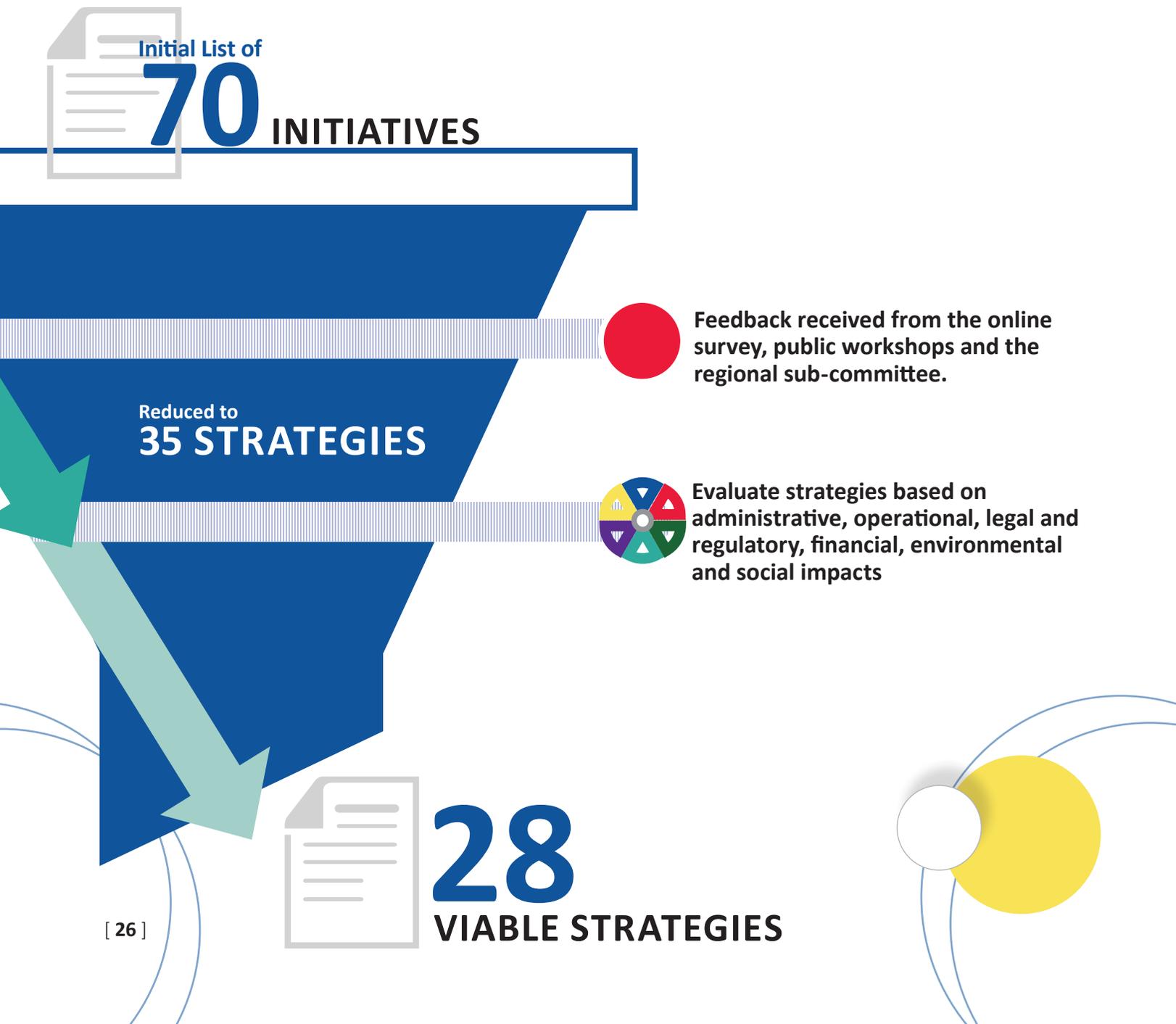
how we are going to get there

During the master planning process, using input from the Regional Sub-committee, the licensed haulers, and the general public, a matrix of needs and potential strategies were identified and developed into practical strategies for implementation.

# Strategy Development

Phase 2 of the planning process focused on assessing needs and opportunities, identifying potential strategies that could address needs and capitalize on opportunities, and evaluating the anticipated impacts of the potential strategies.

The initial list of potential strategies identified over 70 different initiatives to be further evaluated. Considering the feedback from the online survey, public workshops, and the regional sub-committee, the initial list was streamlined to 35 potential strategies. These 35 strategies were evaluated for efficiency, effectiveness, and potential obstacles to implementation.



Each of the 35 potential strategies were evaluated based on six impact categories including:

- **Administrative impacts** describing what the strategy would require to administer and whether it would increase or decrease administrative burdens;
- **Operational impacts** describing whether the strategy would require additional staff and/or equipment;
- **Legal and Regulatory impacts** describing whether ordinances revisions, permit modifications, or state law modifications would be necessary;
- **Financial impacts** estimating capital, operating, or labor cost impacts, and whether the strategy would add cost, save cost, increase revenue or decrease revenue;
- **Environmental impacts** estimating tons diverted, and describing other environmental impacts such as carbon emissions and air quality;
- **Social impacts** describing the anticipated effects on customers and the community.

After considering these impacts, the list of 35 potential strategies was narrowed down to the 28 strategies determined to be viable for the County (i.e. Recommended Strategies).



Solid Waste Master Plan  
**SECTION 3. HOW WE ARE GOING TO GET THERE**



## Zero Waste to Landfill

To reach our goal of putting zero waste in our landfill, we will **COLLABORATE** with our partners to **MINIMIZE** how much waste is generated, **MAXIMIZE** how much is recycled, **MAXIMIZE** recovery, and responsibly **MANAGE** what is left over.



The following sub-sections provide an overview of the 28 Recommended Strategies for inclusion in the Pinellas County Solid Waste Master Plan and are organized based on how each recommended strategy addresses its respective placement on the Zero Waste to Landfill Loop. **Note the Recommended Strategies on the following pages have been numbered for ease of reference, and does not reflect prioritization or preference.**



### 1. Commercial Sector Edible Food Waste Prevention, Reduction, and Reuse

## Commercial Edible Food Waste

**Provide education and guidelines to businesses for the management of edible food.**

Considering restaurants, grocers, food retailers, wholesalers, food manufacturers, and hotels/motels generate the largest fraction of wasted food, this strategy will target the discarded edible fraction of pre-consumer food from these establishments by educating these establishments on how to segregate the edible fraction of wasted food and encourage donations to food banks.

## Expand the A to Z Guide

**Promote awareness of waste prevention and reuse opportunities in the County through expansion of the A to Z Guide.**

This strategy includes adding more opportunities to prevent waste and reuse items, including additional promotion of techniques to reduce or divert organics, and expanding the promotion of the A to Z Guide itself to reach more residents.

### 2. Continue to Promote Waste Prevention and Reuse

### 3. Promote Low Waste/Zero Waste Events at Public Venues

## Zero Waste Events

**Develop a guide for low waste or zero waste events at public venues.**

This strategy includes guidance for pre-event planning as well as event set up and tear down. In the short term, the guidance is voluntary, but could become a requirement in the long term, for every event held at a public venue which could be shared with all County departments and municipalities within the County.

## Institutional In-house Composting

**Promote County institutional diversion strategies for food waste that include in-house composting.**

This strategy includes educating and encouraging the responsible authorities of institutions such as correctional facilities and educational institutions to implement in-house composting programs. The County has a total of 20 correctional facilities and over 270 educational institutions.

4. Promote Institutional Sector Food Waste In-House Composting Program

5. Environmentally Preferable Purchasing Guide

## Purchasing Guide

**Lead by example, with every County Department using its purchasing power to promote environmentally preferred practices.**

This strategy includes setting measurable standards for buying recycled content, reducing toxicity of items purchased, and minimizing waste generation by County Departments. The purchasing department could track and report on success each year. The purchasing guide could be shared with municipalities within the County to encourage similar action countywide.

6. Promote Commercial Sector C&D Recovery and Recycling

## C&D Recycling

**Evaluate the market feasibility to recycle C&D currently landfilled to determine appropriate promotional efforts.**

This strategy includes encouraging the continued recovery and recycling of C&D and reaching out to contractors to better understand the constraints of recycling more C&D. It could eventually result in a requirement to recycle certain materials generated in construction and demolition projects.

MINIMIZE GENERATION





**7. Organize Collection in Unincorporated Area with Universal Recycling**

**Organized Collection**

**Organize collection in the unincorporated areas using a 3-phase approach.**

The first phase includes customer and hauler outreach; the second phase includes implementing a non-exclusive franchising system, and the third phase includes implementing exclusive franchises. Organized collection would include curbside recycling as part of the standard service for residents, and may include separate yard waste collection. If yard waste is included, the material would be processed at a new County-owned composting facility. Eventually, food waste could be added to separate yard waste collection service, which would be processed at the expanded composting operation at the County Complex.

**8. Commercial Sector Food Waste Collection**

**Commercial Food Waste**

**Establish an educational program for the commercial sector on food waste segregation and donation and implement a program for the collection and composting of non-edible food waste.**

Building on the educational program to donate edible food, this strategy includes the County providing bins to commercial establishments for collecting segregated pre-consumer and post-consumer non-edible wasted food. It also includes the County processing the food waste by expanding the composting operation at the Complex, already processing yard waste.

**9. Residential Sector Food Waste Diversion Program**

**Residential Food Waste**

**Evaluate end markets and the economics of curbside residential food waste collection.**

This strategy would be implemented in the long term if the market conditions and customer sentiment warrants the new program. It would require organized collection in the unincorporated areas to effectively collect residential food waste curbside which could be added to yard waste collection, and processed at the expanding composting operation at the Complex.

**MAXIMIZE RECYCLING AND DIVERSION**



MAXIMIZE  
RECYCLING  
AND DIVERSION



### Electronics Collection

**Implement curbside collection of electronics in the unincorporated areas of the County.**

This strategy would require organized collection in the unincorporated areas to effectively collect residential electronics curbside. The electronics could be separately recycled or could be processed in the WTE facility to generate energy.

10. Curbside  
Collection  
of Electronic  
Waste

### Universal Recycling Ordinance

**Implement a universal recycling ordinance that requires participation in recycling programs.**

This strategy could include requiring residential and commercial entities to recycle. If collection is organized in the unincorporated areas and recycling is included as part of the standard collection service, the universal recycling ordinance would primarily focus on the commercial sector. The commercial sector generates more than half of all waste generated in the County.

11. Universal  
Recycling  
Ordinance

### Standardize Recycling Education

**Standardize recycling programs county wide, inside municipalities and the unincorporated areas, by working with recyclables processors in order to standardize the materials processed and marketed.**

Once the materials processed and marketed are standardized, this strategy includes subscribing to a smart phone application to allow residents anywhere in the County easy access to consistent recycling information to improve participation and reduce contamination. It also includes standardizing recycling containers and labeling in all County buildings.

12. Further  
Standardize  
and Expand  
Recycling  
Education Efforts

### Cutting Waste at Work

**Expand the current Cutting Waste at Work (CWW) program to enhance business diversion and expand multifamily recycling.**

This strategy includes enhancing the promotion of the CWW and adding a recognition program for businesses that seek zero waste certification. It also adds efforts to expand outreach and assistance to multifamily complexes.

13. Expand  
Cutting Waste at  
Work Program





### Recyclables Processing

**Coordinate with municipalities and regional partners on collection and processing contracts.**

This strategy includes conducting a feasibility study for the development of a County or municipality owned MRF. It would only include a public MRF if there is a guarantee of tons in the region, and the cost to process could be competitive. Improving processing techniques to minimize contamination is important for public and private MRFs.

### Ash Recycling

**Develop ash recycling methods and specifications targeting recycling and re-use options and markets.**

This strategy includes researching post combustion ash research in Florida and the US to determine what is feasible. The research to date has progressed to a point where beneficial uses exist for this by-product. Standardization of material properties and identifying different ash applications will assist with development of a marketplace for ash reuse and diversion from landfill disposal.



### 15. Develop Ash Recycling Methods and Specifications



MAXIMIZE  
RECOVERY

A circular inset image showing a large pile of waste at a facility, with a building and birds in the background.

### 16. Increase the Ability to Process Waste at the WTE Facility

## WTE Capacity

**Develop the ability to store waste at the WTE facility and study the feasibility of adding a boiler train as an expansion.**

This strategy could include additional projects that allow the County to more effectively process waste with the expansion of the WTE tip floor. It could also include maximizing revenues from the sale of energy by adding supplemental energy generation such as solar or landfill gas at the Complex.

A circular inset image showing a landscape with green grass and a dirt path.

## Advanced Metals Recovery

**Implement an advanced ash recycling and metals recovery facility at the Complex.**

In this strategy, the advanced metals recovery facility would be designed to capture smaller metals than a traditional recovery system using currently available technology with modification of the current ash and metals handling equipment at the WTE. This system would allow the County to capture an estimated additional 15,000 tons per year of metals that are currently disposed with the ash due to size and other factors.

A large teal circular graphic with a white outline, connected to the text by a black line.

## 17. Develop Advanced Metals Recovery Facility at the Complex



**18. Extend the Landfill Life Through Bulky Waste Processing**

**Bulky Waste Processing**

**Extend the life of the Bridgeway Acres Landfill through bulky waste processing.**

This strategy includes processing bulky waste that due to its size cannot currently be put in the WTE. The bulky waste processing equipment could include a shredder, grinder, crusher, screens, magnets, and a manual sorting line. The bulky waste processing equipment would reduce the size of the items, as well as recover resources that currently cannot be put in the WTE so that they can be processed through the WTE or recycled rather than landfilled.

**19. Traffic Improvements at the Complex**

**Traffic Improvements**

**Improve traffic flow at the Complex through development of an additional bypass lane or an alternate entrance.**

This strategy includes developing a master traffic plan to analyze existing traffic conditions and wait times experienced during deliveries to the Complex. The master traffic plan may include improved traffic patterns and/or relocating services at the Complex.

**20. Extend the Landfill Life through On-site Transfer Station Development and Off-Site Disposal of MSW**

**On-site Transfer Station**

**Extend the life of the Bridgeway Acres Landfill by developing a transfer station at the Complex to transfer waste to other disposal or processing locations.**

An on-site transfer station would provide operational flexibility for the management of waste during scheduled and unscheduled maintenance periods at the WTE. The facility could also be used for other support operations to better manage materials such as yard waste, recyclables, tires and bulky waste.

**Flow Control**

**Implement changes to the County Code of Ordinances Chapter 106, referred to as "Flow Control Ordinance", to expand control of the flow of waste generated in the County.**

This strategy includes strengthening language to protect the flow control of waste types already included in the Flow Control Ordinance, and potentially expanding flow control to include additional types of waste and include performance criteria. It may also include expanding the current hauler licensing procedure to include haulers of additional types of waste.

**21. Revise Flow Control Ordinance**

RESPONSIBLY  
MANAGE WHAT  
IS LEFT OVER



22. Explore the  
Possible Utilization  
of the Surface  
of the Closed  
Toytown Landfill

**Toytown Landfill**

**Coordinate on future uses of the Toytown Landfill and determine suitable solid waste facilities or operations for the site.**

Possible development options would include composting, bulky waste processing, ash recycling and other low impact operations.

23. Monitor and  
Evaluate the  
Potential Availability  
of Contiguous  
Properties for  
Purchase

**Purchase Contiguous Properties**

**Look for properties adjacent to the Complex that could enhance or expand future solid waste operations.**

This strategy includes determining for which types of solid waste operations or facilities may be necessary in the future and which adjacent properties may support those future operations.

**Capacity Expansion**

**Potentially expand capacity at the Bridgeway Acres Landfill by conducting a feasibility study for the construction of an Mechanically Stabilized Earthen (MSE) berm.**

Vertical expansion of airspace within the existing landfill footprint using MSE berms is a viable expansion methodology. The steep outer slope of the berm would allow vertical airspace gain with minimum or no impact to land surface outside the current landfill footprint. Ash from the WTE may be feasible to use as a construction material in lieu of soils.

24. Expanding  
Capacity  
of Existing  
Disposal Area



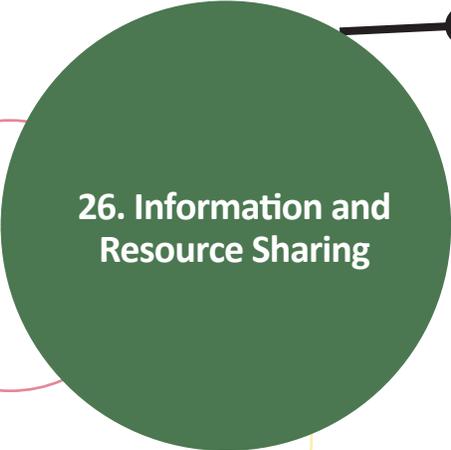
## Regional Collaboration

**Establish a Regional Partners Committee to collaborate with the surrounding area.**

The Regional Partners Committee includes the counties of Hillsborough, Manatee, Pasco, and Sarasota and the City of Tampa. Two primary objectives for the Regional Partners Committee include advocating for legislative and regulatory initiatives and information and resource sharing.



**25. Regional Partners Committee**



**26. Information and Resource Sharing**

## Information and Resource Sharing

**The Regional Partners Committee shares best practices and lessons learned in solid waste management, and looks for opportunities to share resources.**

This strategy may include inter-local agreements between jurisdictions to manage scheduled outages at WTE facilities or other circumstances, issuance of a region-wide Request for Letters of Interest (RFI) to describe certain problem materials the region has in common and see what solutions the private sector might propose, and other collaborative initiatives.



## Legislative and Regulatory Actions

**The Regional Partners Committee determines which specific legislative initiatives are implemented.**

This strategy could include monitoring state and federal legislation to advocate for product stewardship and extended producer responsibility, reasonable recycling contamination regulations, renewable energy and power generation, or changes in regulations to benefit projects related to beneficial ash reuse.

27. Legislative and Regulatory Monitoring and Advocacy

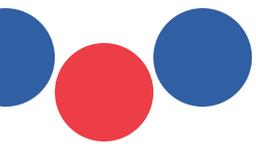
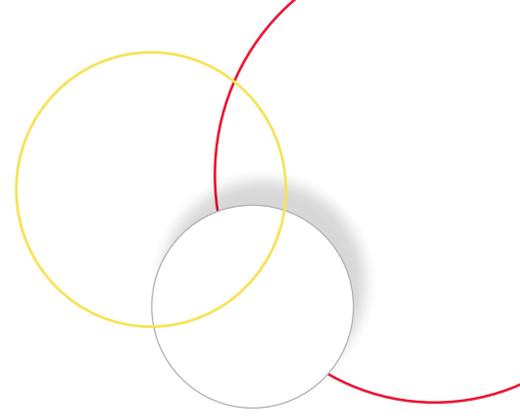
## Cooperative Ash Recycling Agreements

**Develop cooperative agreements with Tampa Bay area WTE plants for recycling and testing of ash for construction projects.**

This strategy includes securing large quantities of ash to potentially be used on construction projects to provide greater economies of scale for beneficial reuse. Use of ash could be for the development of MSE berms or road construction projects.

28. Develop Cooperative Agreement with Tampa Bay Area Plants for Recycling Ash as Construction Products

COLLABORATE WITH PARTNERS



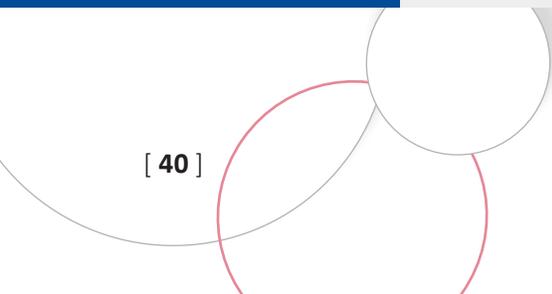
**Table 1** provides a summary of timelines for the implementation of each strategy.

The implementation timing of each Recommended Strategy was reviewed, and determined based on efforts anticipated for each individual strategy as well as interdependency on other strategies where applicable. Because the specific year in which a strategy may be implemented could vary, implementation timing has been characterized in general terms as the short term (through 2024), intermediate term (2025 through 2033) or long term (2034- 2048). In some cases, a strategy is an ongoing effort and spans across multiple terms. Table 1 depicts the anticipated timing using dark, solid bars to indicate the timing of implementation activities and light, solid bars to indicate ongoing efforts after implementation.

**Table 1. Strategy Implementation Timeline**

#	STRATEGY	SHORT TERM (THROUGH 2024)	INTERMEDIATE TERM (2025 THROUGH 2033)	LONG TERM (2034 THROUGH 2048)
1	Commercial Sector Edible Food Waste Prevention, Reduction, and Reuse	Ongoing Promotion		
2	Continue to Promote Waste Prevention and Reuse	Ongoing Promotion		
3	Promote Low Waste/ Zero Waste Events at Public Venues	Develop Guide	Ongoing Promotion	
4	Promote Institutional Sector Food Waste In-House Composting Program	Ongoing Promotion		
5	Environmentally Preferable Purchasing Guide	Develop Guide	Ongoing Promotion	
6	Promote Commercial Sector C&D Recovery and Recycling	Ongoing Promotion		

**MINIMIZE GENERATION**



Solid Waste Master Plan  
**SECTION 3. HOW WE ARE GOING TO GET THERE**

#	STRATEGY	SHORT TERM (THROUGH 2024)	INTERMEDIATE TERM (2025 THROUGH 2033)	LONG TERM (2034 THROUGH 2048)
7	Organize Collection in Unincorporated Area with Universal Recycling	Phase 1 through Phase 3		Add Food Waste
8	Commercial Sector Food Waste Collection	Promotion	Collect and Process	
9	Residential Sector Food Waste Diversion Program	Promotion		Add Food Waste
10	Curbside Collection of Electronic Waste	With Organized Collection		Promotion
11	Universal Recycling Ordinance	Educate	Enforce	Ongoing Promotion
12	Further Standardize and Expand Recycling Education Efforts	Standardize	Ongoing Promotion	
13	Expand Cutting Waste at Work (CWW) Program	Expand CWW	Ongoing Promotion	
14	MRF Processing Capacities and Contamination	Ongoing Evaluation		
15	Develop Ash Recycling Methods and Specifications	Develop Methods	Promotion	
16	Increase the Ability to Process Waste at the WTE Facility	Increase Capacity	Monitor	
17	Develop Advanced Metals Recovery Facility at the Complex	Develop Facility	Recover Metals	

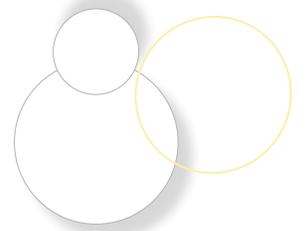


**MAXIMIZE  
 RECYCLING  
 AND DIVERSION**



**MAXIMIZE  
 RECOVERY**

**SECTION 3. HOW WE ARE GOING TO GET THERE**

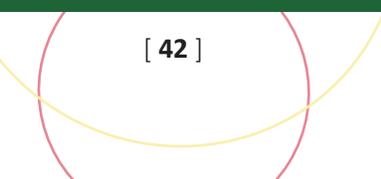


**RESPONSIBLY  
MANAGE WHAT  
IS LEFT OVER**

#	STRATEGY	SHORT TERM (THROUGH 2024)	INTERMEDIATE TERM (2025 THROUGH 2033)	LONG TERM (2034 THROUGH 2048)
18	Extend the Landfill Life Through Bulky Waste Processing	Develop Process	Recover Bulky Waste	
19	Traffic Improvements at the Complex	Implement		
20	Extend the Landfill Life through On-site Transfer Station Development and Off-Site Disposal of MSW	Design/Build	Transfer Outage Waste	
21	Revise Flow Control Ordinance	Implement	Enforce	
22	Explore the Possible Utilization of the Surface of the Closed Toytown Landfill	Ongoing Evaluation		
23	Monitor and Evaluate the Potential Availability of Contiguous Properties for Purchase	Ongoing Evaluation		
24	Expand Capacity of Existing Disposal Area	MSE Berm	Ongoing Expansion	

**COLLABORATE  
WITH PARTNERS**

25	Regional Partners Committee	Form Committee	Ongoing Communication	
26	Information and Resource Sharing	Communicate	Transfer Outage Waste	
27	Legislative and Regulatory Monitoring and Advocacy	Ongoing Communication		
28	Develop Cooperative Agreement with Tampa Bay Area Plants for Recycling Ash as Construction Products	Develop Agreement	Recycle Ash	





## SECTION 4

### impacts of recommended strategies

The estimated impacts of the Recommended Strategies were measured on a triple bottom line basis including financial, environmental, and social.

## Financial Impacts

The financial return on investment (FROI) evaluation provides projections of financial impacts directly related to the County's revenues and expenses. To measure financial impacts to the County for the planning period, each of the twenty-eight Recommended Strategies was reviewed with County staff to estimate the anticipated financial impacts. For some of the Recommended Strategies, specific measurable financial impacts cannot be known at this time and are not included in the FROI evaluation. Recommended strategies with specific measurable financial impacts are included in the FROI evaluation. Table 2 summarizes the cumulative measurable tonnage and financial impacts associated with these strategies.

**Table 2. Measurable Financial Impacts per Strategy**

MEASURE	IMPACT
Total net tons managed at Complex <sup>1</sup>	35,069,124
Total additional tons diverted or redirected from landfill disposal <sup>2</sup>	5,274,722
Average additional tons diverted or redirected from landfill per year	181,887
Overall financial impact <sup>3</sup>	\$ (353,948,148)
Average annual financial impact	\$ (12,205,109)
Financial impact per ton diverted or redirected <sup>4</sup>	\$ (67.10)
Financial impact per total tons managed at Complex <sup>5</sup>	\$ (10.09)

<sup>1</sup> Total tons over 30-year planning period per Baseline Report minus tons diverted (traditional recyclables, and organics including yard waste and food waste).

<sup>2</sup> Estimated additional tons diverted or redirected from landfill over the 30-year planning horizon (through 2048). Note that this includes bulky waste that is being diverted from the landfill to be processed at the WTE, and MSW during outages at the WTE being redirected to other WTE facilities in the region.

<sup>3</sup> Total estimated financial impact to current costs over the 30-year planning horizon (through 2048).

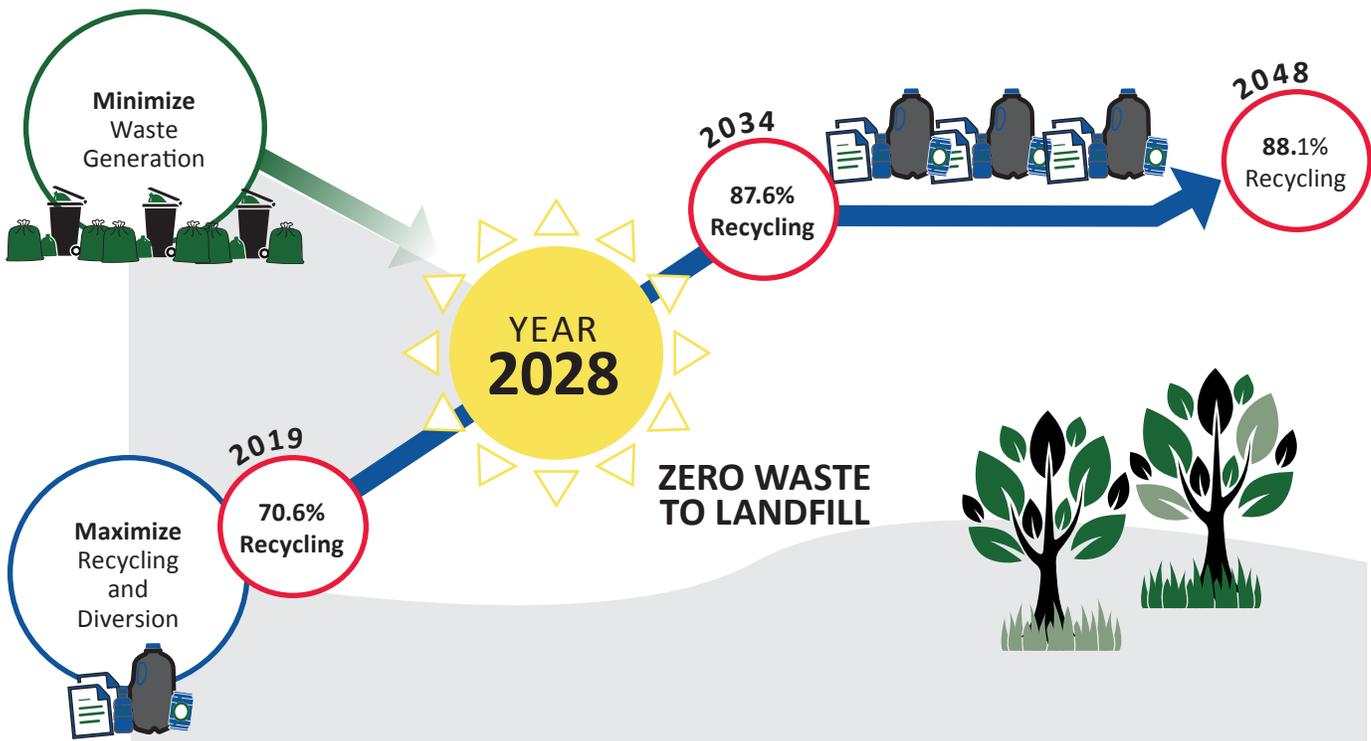
<sup>4</sup> Overall financial impact through the planning period divided by additional tons diverted or redirected during the planning period.

<sup>5</sup> Overall financial impact through the planning period divided by total net tons managed at the Complex during planning period.

# Environmental Impacts

The implementation of the twenty-eight strategies is designed to position the County to sustainably manage wastes effectively through the planning period. As shown in Section 3, the first impacts are driven by **Minimizing Generation** and **Maximizing Recycling and Diversion**. With the strategies from these initiatives, the County will be able to increase the recycling rate from the current 70% (2018) to 87.5% by 2024. This percentage is the combination of traditional recycling credits and renewable energy recycling credits as calculated annually by the Florida Department of Environmental Protection (FDEP). Continuing the implementation of intermediate and long-term Strategies allows the County to continue to maintain a recycling rate above 86% and increasing to 88% as the community and waste generation grows through 2048.

## Recycling Rates

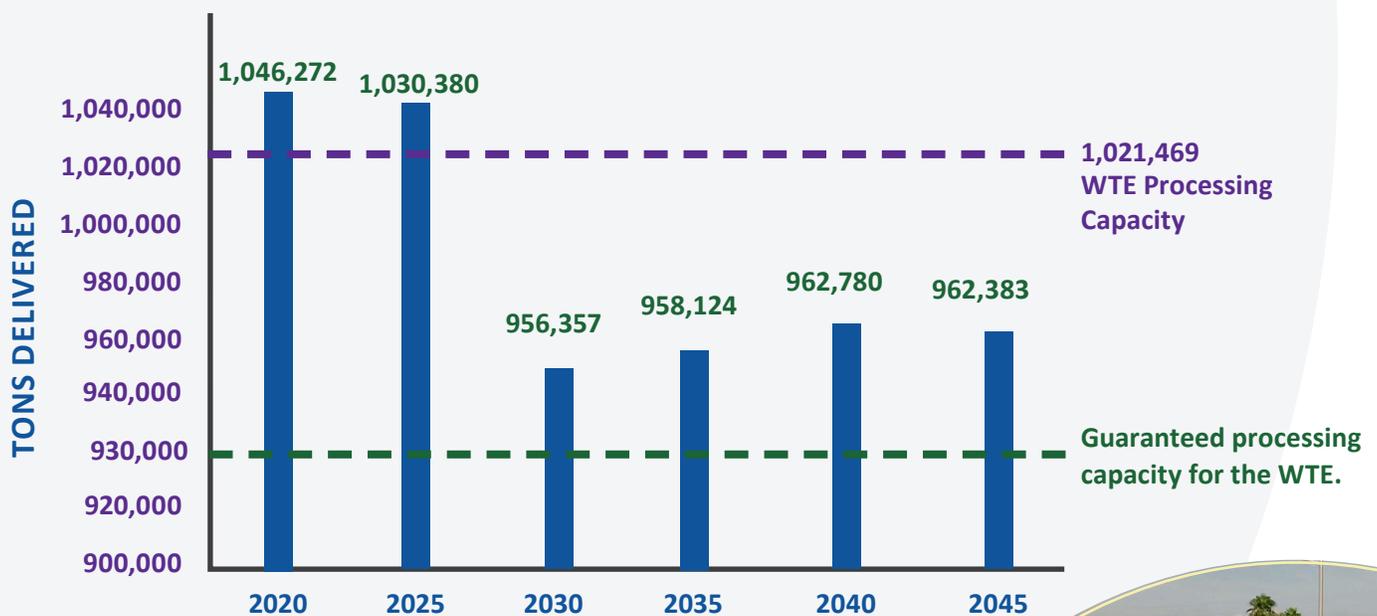


The third key component to meeting these metrics is the ongoing and efficient operation of the WTE to **Maximize Recovery of waste**. The WTE is anticipated to receive more material than can be processed by 2026. At this time, all waste delivered in excess of the WTE capacity would need to be landfilled. With the diversion practices mentioned above combined with movement of the excess waste from the landfill the County can efficiently utilize the WTE capacity. **Collaborating** with regional partners, the County could achieve greater recycling credits through the processing of waste at other facilities in the region as capacity becomes available.

**Figure 4** shows the capacity of the WTE and waste deliveries to the Complex, if the Recommended Strategies are implemented.

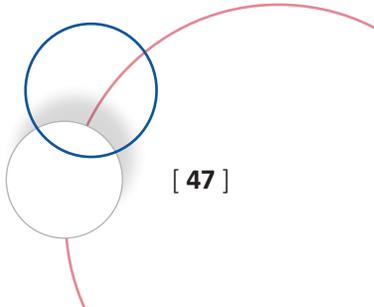
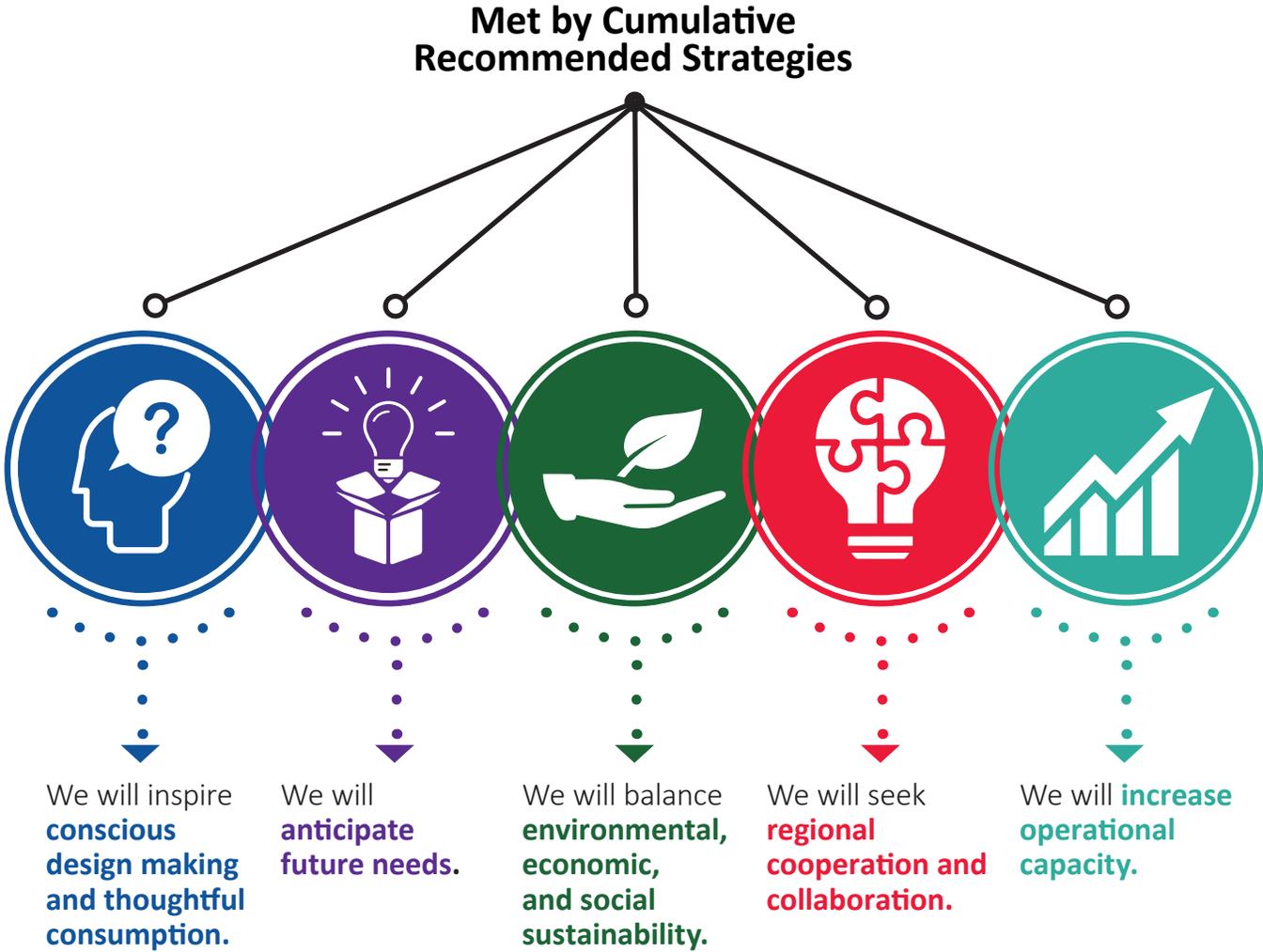
Three events occur across the planning timeline. The first is the implementation of short term strategies to increase recycling and waste reduction. These strategies are effective to stem increased waste deliveries anticipated to occur with growth. Waste diversion during the intermediate term is met through ongoing recycling programs and education and the County's ability to reduce deliveries through regional collaboration for management of waste generated during WTE maintenance outages. The third event is the implementation of curbside residential organics collection which keeps waste deliveries below WTE capacity through the planning period.

**Figure 4. Projected Tons Delivered to the Complex, WTE Capacity**



# Social Impacts

The cumulative effect of the Recommended Strategies on the County's system will support the Plan's Vision Statement and will work to further the values determined at the beginning of the planning process.



# Sustainable Return on Investment

In order to build on the financial evaluation, a Sustainable Return on Investment (SROI) evaluation was also conducted for the Recommended Strategies. Traditional financial evaluation tools rely exclusively on financial impacts, and are not by themselves able to accurately quantify the non-cash benefits and costs accruing to the County and to the community as a whole resulting from a specific decision or investment.

The SROI evaluation was used as another tool in the master planning process to account for these important factors in a measurable way and provide the County with additional information on which to make better and more informed decisions regarding the future of its solid waste management system.

The SROI results for the Recommended Strategies are estimated and reported in specific impact categories as part of a Sustainability Value Accounting evaluation. The results of this evaluation yield both Physical and Monetary Indicators. The concept behind the Sustainability Value Accounting evaluation is to cross reference impacts by “Resources” and “Triple Bottom Line” categories. Resources include Land and Waste Management, Energy, People, and Materials (typically tons recycled). The Triple Bottom Line includes Financial (direct and indirect), Social and Environmental impacts. The impacts from this evaluation are provided in different units and help to communicate the value of each key driver. The physical measures of change stem from the same sets of calculations as the monetary measures, but are presented in terms that are more easily understood. Examples of physical measures of change can include job creation, energy savings, greenhouse gas (GHG) reductions, and increased/decreased traffic congestion. The monetary indicators can include life-cycle cost, traffic benefits, environmental benefits, safety benefits and community income from job creation.



# Conclusion

## The Path to Zero Waste to Landfill

The County's journey to complete this planning process has included evaluations of every facet of the solid waste system, engaging stakeholders with a variety of view points along the way, and led us to the ultimate goal of Zero Waste to our landfill.

Every journey begins with the first steps. For Pinellas County this included developing a comprehensive understanding of the abilities of their solid waste system, the extent of their partnerships within the community and with their regional partners. The County looked for input from the community for what type of solid waste system will reflect the community now and into the future.

These first steps were the development of the County's goal - Zero Waste to Landfill. Over 70 different strategies were initially identified and evaluated. These were then paired down through public workshops and meetings with stakeholders to the final 28 strategies.

These strategies make up a closed loop where the community will minimize generation, maximize recycling and diversion, maximize recovery, and responsibly manage leftovers, while collaborating with local and regional partners.

Implementation of these strategies requires investment in the County's solid waste system. These investments yield environmental and social benefits while extending the useful life of the County's only landfill and maximizing the WTE facility.

The programs defined by these strategies are enhanced with maximum participation. It will take County-wide implementation, with the participation of all the municipalities, in partnership with the County, to deliver the greatest impact to the community. Change is never easy but as these programs take shape, together we will facilitate lifelong improvements to our comprehensive solid waste management system and achieve Zero Waste to our landfill.



