Talking... TRASH

The Newsletter of the SWANA Florida Sunshine Chapter Spring 2023

Join us April 28-29 | Additional Details
Contestants, sponsors, and volunteers needed!

Geosyntec consultants

Support Services for Solid Waste Management in Florida

Uncertain Times. Informed Decisions.

We understand the immediate and longer-term impacts of the global COVID-19 pandemic on solid waste operations, not least in terms of looming inflationary pressure, labor shortages, and uncertainty surrounding supply chain issues, which has affected procurement of new equipment and parts and distorted recycling markets. Many services such as curbside recycling remain popular with the public, yet for the majority of our clients are economically marginal. Waste generation has changed during the pandemic, with many haulers reporting sustained increases in residential waste and recycling streams coupled with declines in commercial volumes. No matter the challenges you are facing, Geosyntec can help your solid waste operation to be more efficient and resilient for an alternate future.

What We Offer

Our experienced team of engineers, scientists, and economists can help.

Rate and Cost Analyses: Updated rate structures and cost-of-service models are needed to better understand cash flow implications. We can help with:

- Rapid rate studies, audits, and level of service analyses to rebalance rate structures and competing priorities
- Revising input costs, inflation, and volume projections based on updated benchmarks and industry data
- Grant application assistance for critical infrastructure

Engineering Design: We have pioneered the use of mechanically stabilized earth berms designs to maximize capacity expansions. We can help with:

- Vertical landfill expansions to add capacity through airspace volume while maintaining existing site footprint
- Design of landfills over challenging subgrade conditions such as soft soils and karst
- Innovative gas collection and optimization and leachate management solutions to help reduce cost and maintenance needs for owners and operators

Planning: Revised near/medium term plans under “what if” scenarios will be key to providing necessary flexibility and resilience to maintain services and budget levels through the next several fiscal cycles. We can help with:

- Contingency planning
- Alternative disposal solutions, operational, and recycling market assessments

In these times of unprecedented global uncertainty, Geosyntec offers advice on fulfilling service obligations and customer commitments while minimizing costs and risks.

ABOUT GEOSYNTEC

With 1,800 engineers, scientists, and technical personnel; we serve our clients from more than 90 offices in the United States, Canada, the United Kingdom, Ireland, Sweden, the United Arab Emirates, and Australia.

Geosyntec has one of the largest groups of solid waste professionals in Florida (20+) who can provide engineering, solid waste planning expertise, and advisory services for your project needs.

For additional solid waste advisory-related services, visit geosyntec.com/swa

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Letter from the President

It's that time of year when the days are getting longer, winter is in the rear-view mirror and we are getting ready for a flurry of upcoming SWANA events! If you haven't made plans already, time to get going – our Road-E-O is April 28-29th in Tampa. This is a unique event that celebrates front-line workers in our industry and allows them to demonstrate their training and skill in getting collection vehicles and landfill equipment to navigate all sorts of obstacles. Every participant takes great pride in their efforts and the best of the best are rewarded with a trip to the national event currently planned for Colorado.

Regionally, SOAR is scheduled for mid-April in Atlanta, GA. As the largest chapter in the region (and the country), I hope our chapter can show well. It will be a while before a national conference is this close so take advantage of this opportunity. Our call for papers for the Summer SWANA FL event is out. This conference will be in Daytona Beach July 23-25. Please submit abstracts to keep the momentum going after our event in Orlando. We had an amazing turnout and I hope that the summer event continues to exceed expectations. Lastly, don't forget about our Chapter and National college scholarships. Applications are online and due by May 1st. You can't win if you don't enter!

Prior to the summer event, I will be stepping down as President as Jason Timmons with Sarasota County steps into the role. First of all, there is no one who has worked so tirelessly as Jason to support the chapter and ensure that all of our members are getting value from the local chapter. Jason has been a key leader through his involvement on the state level to help us get much needed CEU's for conference presentations and has always been there with creative ideas. Congratulations Jason and I look forward to your leadership over the next several years as I slip into the "past president" role.

With that I'd like to thank the Board for their assistance over these last four years. It's been a challenge. I took on the position in 2019, we had our Winter event and then…..COVID. The Board had to get creative and find ways to keep doing what we do to bring information to our members. Through webinars, our newsletters and the work of our technical committees, we kept everything going as best as we could, weathered the financial hit fairly well and came out of it stronger and engaged. I'd also like to thank Tammy Hayes for her guidance as past president and wish her luck as she takes on more at the national level – always good to have a Florida advocate at the adult table. Last but not least, the glue that keeps us going, thanks to Crystal our chapter administrator who is quick to remind me repeatedly about deadlines I've missed, keeps us in good standing with national and a great negotiator with conference hotels.

I look forward to seeing everyone again in Daytona and again thank you everyone for the support and help over the last four years.

Sincerely,

Keith Howard
SWANA FL President

In This Issue

Using 6 Critical Elements to Drive Quality on a Project

Why do we never have the time to do things right the first time, but always have time to do them over again? Let's change that.

Whitney Rodriguez

Quality can be viewed as the process of delivering excellence that exceeds clients' expectations. Throughout a project, there are several components to this process, but let's focus on the *six critical items that drive quality*. It is key to plan for quality, otherwise it may not happen.

Teamwork and quality go hand in hand.

#1: Identify an Appropriate Project Team at the Proposal Stage and Budget Accordingly for Team Members

It is important to identify the necessary team members for the project scope of work and get them involved in the proposal, if possible. In the very least, budget accordingly for colleagues on the project team. An example of this going poorly is where a project had more technical aspects than anticipated, and the project budget was not estimated to include the necessary technical personnel to perform those aspects of the project. This resulted in the project being over budget and taking longer than anticipated. If the technical professional was included in the project team at the beginning, the additional cost and time could have been avoided. Choosing the appropriate project team from the start benefits the internal and external team, so the key players are involved from the beginning. Changes to the project team could lead to re-work or cost overruns as a result of getting the new team members up to speed.

#2: Make Time for Quality and Plan Ahead for the Process

I know this sounds rudimentary, but it is so important to make time and develop a process to ensure quality. Once you have identified your project team, set up time for meetings and deliverable reviews. Include the client in appropriate meetings to ensure the internal team understands the client's goals and objectives. Set up a process and schedule for project quality control (QC). Schedule work kickoff meetings, deliverable reviews, and debriefs. Use appropriate checklists and templates for work products. Save time and money doing things right the first time around. Project QC must be applied throughout the project process—not just at the end.

#3: Make Sure All Deliverables, Proposals, and E-mails with Conclusions and/or Recommendations are Reviewed by Two Colleagues

This goes without staying, but it is crucial to have your work checked by other member(s) of your project team. Another set of eyes on work products is important to minimize errors and omissions. You should perform your own self-review, but also have your work reviewed by another team member. Once the

work product is reviewed internally by at least two colleagues, it should be a quality product. This minimizes time needed for the client to review.

#4: Schedule a Project Kick Off to Discuss Goals and Objectives

It is paramount to make sure the project team is on the same page and aligned with the client's goals from the beginning. The strategy and plan to achieve those goals may change, and even the objectives may change. It is important to keep the project team abreast of any of these changes. Additionally, as the scope changes, it may be appropriate to have onsite meeting(s) with the client and/or subcontractor to ensure all team members know the objectives and discuss the best process to achieve those.

For example, I worked on a project that involved routine compliance reporting for a deep injection well system. Typically, this project involves routine tasks; however, we were working on their permit renewal and that involved new objectives for this site. We knew from other deep injection well projects the sampling methods would change per their new permit. To get ahead of this and make sure the new sampling methods would work at this site, we proposed an alternative sampling procedure that was approved and implemented prior to the new permit issuance. This helped the team to prepare in advance for the new sampling methods and ensure that there would not be any problems completing those once the new permit was issued.

#5: Schedule Regular Check-ins with the Project Team, Both Internal and External

An easy way to keep the project team on track and communicating on a regular frequency is to set up regular check-ins—both internal and external (includes clients and subcontractors, if appropriate). Keep in mind the different types of communication (written, verbal, and nonverbal) and the importance of timely responsiveness. Know when to e-mail, call, or meet in person. There are times when each form of communication is important. Something short and direct can be an e-mail; however, if you have not recently spoken with your team member, it may be best to give them a call. Also, if you have not been to the project site in some time, it may be appropriate to meet with the team onsite. Regular check-ins make it easy to discuss status updates and, if needed, pivot as a whole team to align with client scope changes.

#6: Schedule a Project Debrief to Discuss Lessons Learned for Future, Similar Projects

Chances are, there is something that may not have gone as planned on the project. Unfortunately, even with planning for quality and going through this process, these things can happen. It is important to debrief with your project team and discuss lessons learned. That way, we can continue to sharpen our skills and learn from any mistakes moving forward.

In closing, let's strive to take the time to do it right the first time around in all things that we do, through executing our planned quality process.

Whitney Rodriguez, PE, is Project Manager for SCS Engineers. She can be reached at (813) 758-4706 or e-mail WRodriguez@scsengineers.com.

Early Landfill Gas Collection: Why You Should Consider it in Your Next Gas Collection and Control System Design

Stephanie Liptak, E.I.T., Laila Al-Khalaf, E.I.T., and Anthony Detweiler

Gas migration, odors, and elevated surface emissions are often among landfill gas (LFG) collection issues at landfills. These issues can lead to unsafe work conditions, complaints from citizens, potential hazardous atmosphere in below grade work areas, and, in the worst-case, Notice of Violations (NOVs) and/or fees from regulatory agencies. Common practices to decrease odors and gas migration are to install a gas collection and control system (GCCS) with extraction wells, both horizontal and vertical. While these solutions are viable, they do not always capture all the gas available. Additionally, vertical extraction wells can be costly, as they require a full construction crew for installation. Vertical wells also require at least 40 to 50 feet of waste to remain approximately 15 feet off the bottom liner system, which may take upwards of five years depending on a site's fill sequencing plan. Horizontal collectors can be installed earlier than vertical wells; however, these wells have the potential to settle over time as waste is placed on top of them. Installation of both vertical and horizontal wells can affect day-to-day site operations. A new solution is to install collectors "early", prior to regulation timeline requirements and before waste is in place.

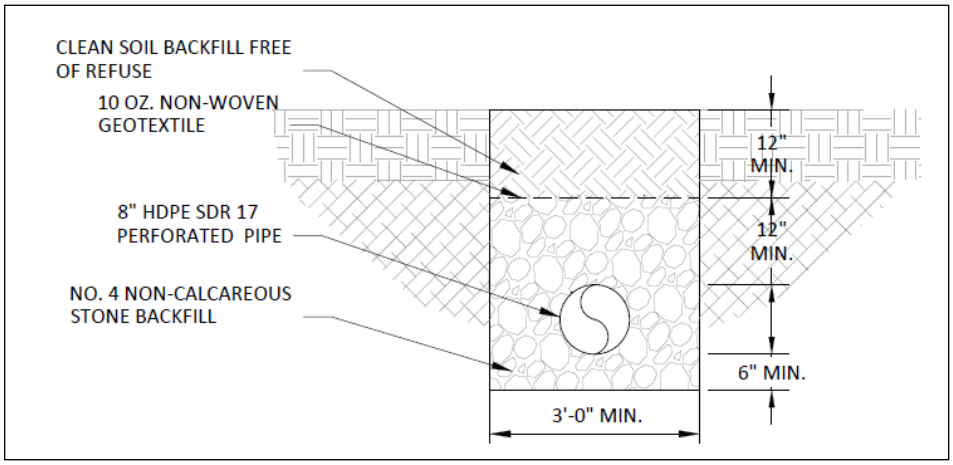

Figure 1 - Section view of early collector design.

Figure 2 - Early collector installation at the Lena Road Landfill.

Early Collection System Design

Early collection in a new landfill cell prior to waste being placed is a newer concept in the LFG industry. Early collectors consist of perforated High-Density Polyethylene (HDPE), non-woven geotextile wrap, No. 4 non-calcareous stone backfill, and a vacuum source, as seen in Figure 1. They are installed after a cell is excavated/constructed and prior to it being filled with waste. These collectors are sloped in a saw tooth formation comprising of low-points (LPs) and high-points (HPs). To promote drainage of liquids that may enter the collector, the LPs can be strategically placed above the leachate collectors, or a rock pit can be installed beneath the LPs.

An Early Collection Success Story

SCS designed and installed early collectors at the Lena Road Landfill (Landfill) located in Manatee County, FL. The Solid Waste Division at Manatee County (County) strives for innovative ideas and preventative measures to their landfill. Early collection of new waste would benefit the County's LFG powered Sludge Dryer Facility onsite. Construction of the early collectors took place immediately following the completion of their new Cell 4A in February 2022. Waste was placed in the cell a few weeks following the installation. Figure 2 shows the installation of the early collectors during construction.

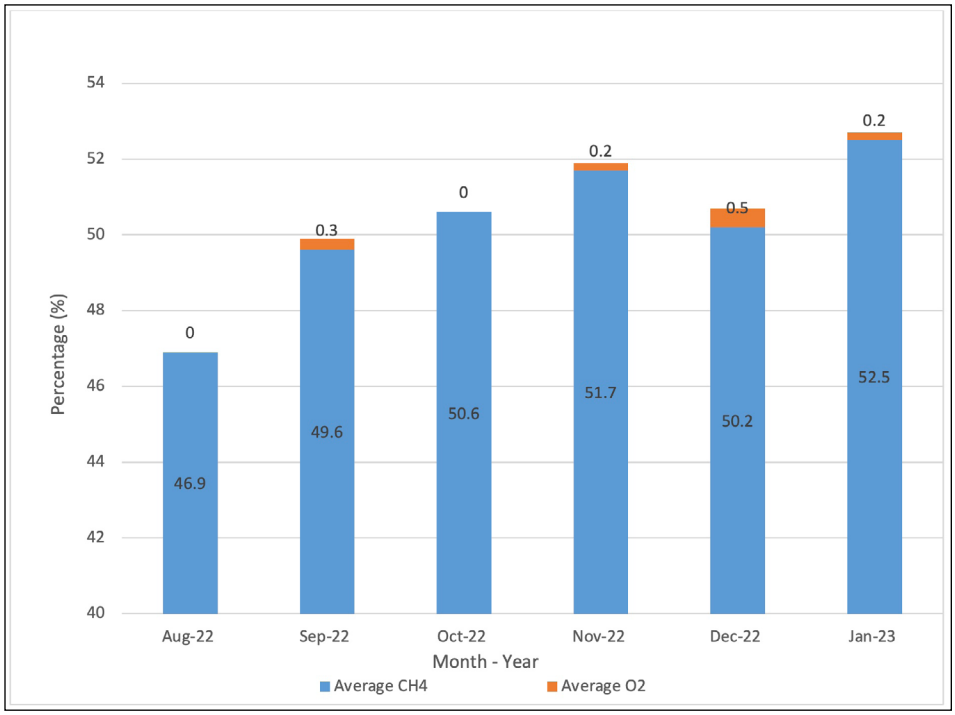

Figure 3 - Average gas quality of Cell 4A Early Collection System.

Gas collection from the early collector commenced in May 2022 and has shown excellent gas quality, which can be seen in the data presented in Figure 3. The County benefitted so much from the early collectors installed in Cell 4A, that early collectors were implemented into new Cells 4C, 5A, and 5B.

Applicability and Outlook

Early collectors are becoming increasingly popular in GCCS designs. They are a low-cost preventative measure for gas migration that can be altered to fit most landfill cell designs. When considering the applicability of an early collection system in your next GCCS design, consider the benefits of installing these systems:

- Early access to waste degradation which can lead to overall improvement of gas quality
- Low maintenance and cost-effective alternative to early in-waste horizontal collectors
- Minimal disturbance of day-to-day landfill operations
- Preventative measure for gas migration and surface emissions

In recent years, the U.S. regulatory agencies have focused on methane emissions from landfills and there are no signs of it slowing down. It is possible that earlier gas collection could even become a requirement in the future. Incorporating early collection systems in GCCS and cell designs now will help ease the transitional period if the rules are incorporated into new regulations.

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20 North American Climate Action Plans Reveal Hundreds of Waste Opportunities

Kate Bartelt and Kevin De Lange

Embedding waste management strategies into regional decarbonization plans is pivotal for long-term climate resiliency. That message came through loud and clear when our team identified more than 300 waste-related climate actions during our review of 20 climate action plans in June 2022. The plans, from 15 cities and five counties, span 13 U.S. states and one major Canadian city, and reinforce the importance of waste's role in decarbonizing many areas of North America.

At the heart of climate resilience is the way we create and consume energy. Decarbonization extends to the embodied energy within the materials we use every day. Unless we reach a zero-waste society, waste has to be managed, and an evolution of waste management efforts is vital to mitigate further climate-related risks.

About 70% of waste climate actions center around three principles: 1) source reduction and reuse, 2) recycling, 3) and organics management—which clearly align with the waste hierarchy. The focus on sustainability shows how the waste industry's actions extend beyond climate planning to environmental, social and governance goals, with waste-related solutions addressing multiple facets of ESG.

The plans acknowledge, directly or indirectly, that carbon emissions from solid waste operations can be deceiving. While direct emissions generally represent a small percentage of a community's greenhouse gas inventory, indirect or consumption-based emissions, including the embodied carbon within discarded materials, is the largest source.

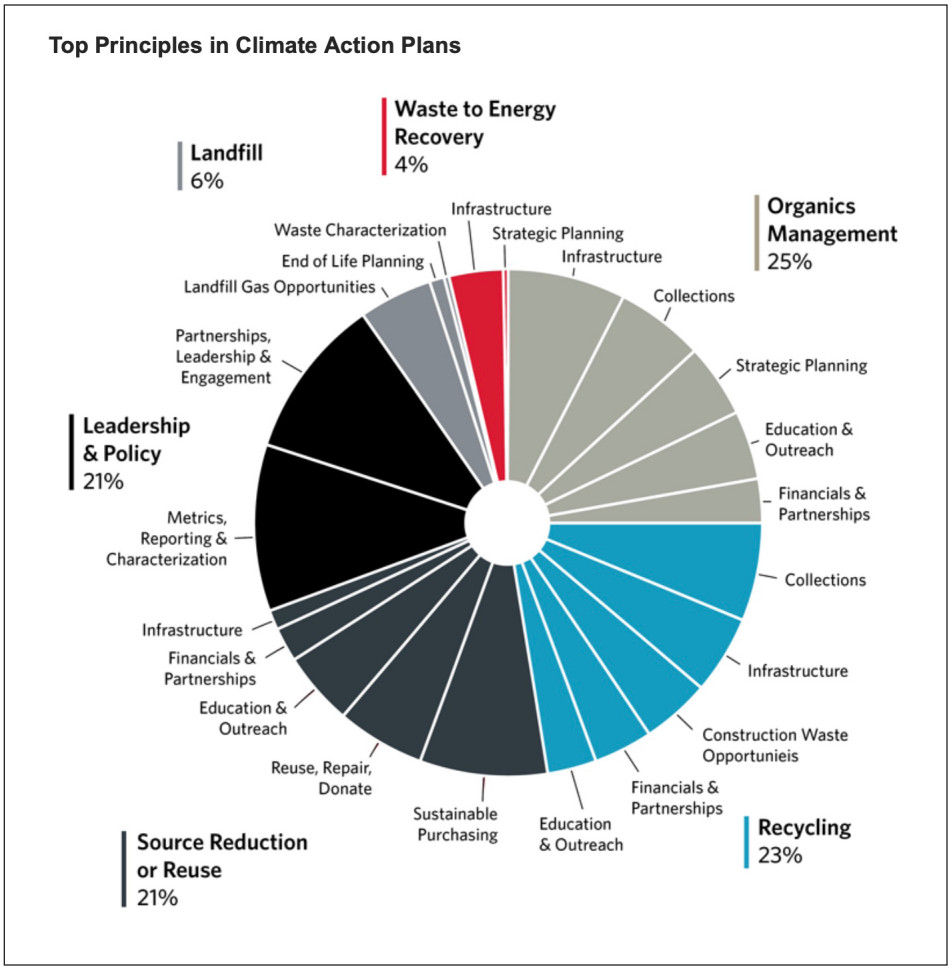


Figure 1

Surprisingly, in most cases, waste planners and solid waste facilities representatives were not involved in developing the plans. Community stakeholders often drove the topics, as well as climate planners evaluating carbon emissions, and policymakers. As a result, the language used in the climate action plans was different than language typically seen in solid waste plans, while addressing the same communities, policymakers, residents, organizations, and communications channels (see Figure 1).

Climate Action Plans Align with Waste Management Hierarchy

We connected the five waste management hierarchal principles to the 300-plus waste climate actions identified. A sixth principle, leadership, and policy, is necessary to take on all climate-friendly waste solutions and added ESG benefits (see Figure 2).

Leadership and Policy

Leadership and policy are intertwined in the delivery of all waste climate actions. They are necessary to reach waste's true ESG potential. Climate action plans are focused on various forms of partnership, leadership, and engagement to drive collaboration and change, which leverage leadership and support engagement activities that contribute to overall ESG improvement. Metrics, reporting, and characterization are centered on climate actions that show the importance of tracking metrics,

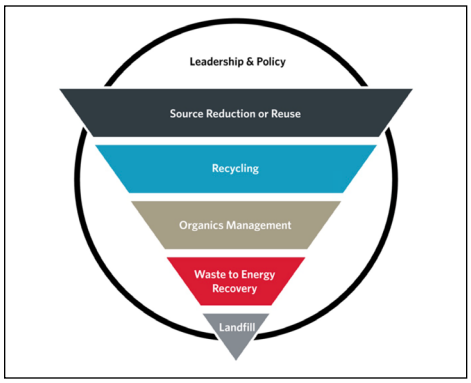


Figure 2

developing data solutions, and creating reliable ESG reporting procedures. Both actions display how circular-economy and waste management plans play pivotal roles in aligning waste climate actions to provide effective ESG solutions (see Figure 3).

High-level opportunities for leadership and policy are:

- Assist in the delivery of solutions that unify strategies and help to integrate the strategies within leadership and the business culture.
- Collaborate with stakeholders to promote strong partnerships that help to integrate waste solutions, and participate in discussions about successful delivery of ESG, circular economy and zero-waste actions.
- Support and develop strategies to optimize operational effectiveness for clients, including change management solutions. For example, the City of Lincoln, Nebraska plans to maintain its AAA bond rating, in part, by disclosing annual greenhouse gas emissions and implementing an environmental management system.

We have helped clients across North America develop and implement waste solutions that strategically align with climate and ESG goals. The City of Toronto has long been a leader in driving toward a zero-waste future. We have valued the opportunity to work alongside them in developing their long-term waste management plan, and the city's climate action plan was included in our research. Part of its plan includes diverting 70% of waste away from the landfill, focusing on waste reduction, reuse, and recycling, and promoting resource conservation and reduced environmental impact. Guiding that process was part of our inspiration to research the climate action plans of other cities and counties, learning about the goals our communities are driving towards.

Once leadership and policy are addressed, opportunity arises to identify driving forces behind waste climate action decisions, and plan for

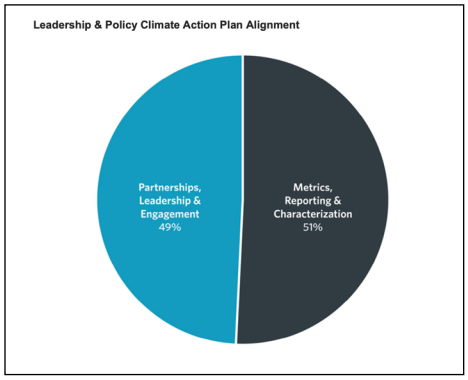


Figure 3

core processes that support climate action. Across all five principles of the waste management hierarchy, financial support and partnerships, infrastructure, and education and outreach are critical elements needed to support the waste reduction and reuse journey.

#1: Source Reduction or Reuse

Twenty-two percent of climate actions focused on source reduction or reuse, which is vital to prevent over-consumption and extend the life of goods and materials. Source reduction or reuse leads to deliverable ESG prospects, such as achieving zero-waste goals and reducing direct and indirect carbon emissions (see Figure 4).

Actions incorporating sustainable purchasing, or reuse, repair, and donation opportunities are the building blocks to a circular economy, as it

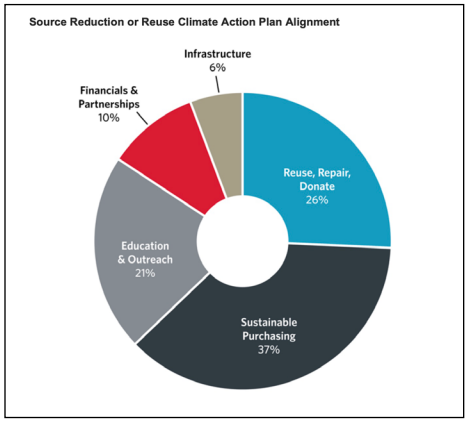


Figure 4

prevents the consumption of raw materials and waste generation, and helps to deliver a sustainable, circular supply chain. In the climate action plans, Toronto empowered businesses to reduce waste and engage in sustainable consumption by establishing a reduction strategy for single use and takeaway items, and Ann Arbor, MI, implemented a single-use bag ban or fee.

High-level opportunities for source reduction or reuse waste climate actions are:

- Offer access to reuse, repair, and donate items at community centers or sustainability campuses
- Build reuse libraries
- Share economy between communities and industries
- Provide education and outreach opportunities to all diversities
- Track emission savings, such as embodied carbon, carbon emissions, virtual water, and water discharges
- Encourage sustainable purchasing decisions that include reused, repaired, or recycled goods or materials
- Encourage product repair, especially for items like electronics, solar photovoltaic, and electric vehicle batteries that contain rare earth materials

#2: Recycling

Twenty-three percent of climate actions concentrated on recycling opportunities of traditional materials:

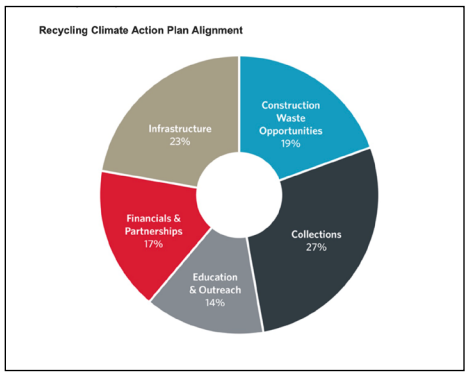


Figure 5

plastic, glass, paper, and metal. Recycling is a fundamental part of the traditional waste hierarchy, and an overarching element of zero-waste and circular economy delivery (see Figure 5).

Recycling climate actions show how important a collective community and industrywide approach is in achieving the ESG advantages of exchanging recycled materials and substituting them to avoid raw material use. We found climate-friendly benefits encourage innovative solutions for construction and demolition waste recycling. Further, improving recycling collection systems can have many ESG benefits, with measurable environmental and social opportunities.

High-level examples of recycling climate actions are:

- Complete recycling facility improvements that aid in landfill diversion and the overall quality of recyclables. Within many of the plans, there appears to be an understanding that contamination is a challenge. Solutions range from education to increasing infrastructure for quality control to developing policies that enforce that use of recyclables.
- Develop recycling collection points inclusively within a community, especially for disadvantaged populations. Many plans included elements of environmental justice, and the need for increased recycling in multi-unit buildings.
- Provide education to improve recycling quality, and to maximize recycling collection potential.
- Consider environmental and social aspects of recycling collections and waste hauling services.
- Collaborate to build and expand markets for recycled materials.
- Track and report recycling rates, and providing assistance in recycling characterization studies.
- Evaluate the environmental benefits of diverting C&D waste from landfills and consider the embodied carbon savings that may be possible, especially compared to concrete, or the use of fresh raw timber products. The plans had an interesting focus on implementing ordinances for construction and demolition diversion at the source, and enacting building code changes. There was also a focus on technical assistance and market development.

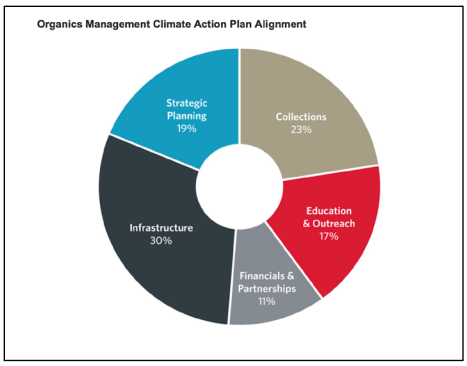


Figure 6

#3: Organics Management
At 25%, organics management accounted for the largest proportion of climate actions. Understanding that methane has a greater climate impact than carbon dioxide is the largest potential area for climate mitigation through the climate action plans. Composting and anaerobic digestion were identified as key infrastructural opportunities to provide climate mitigation and adaptation success. It is vital that processes also aim to understand and improve organics collection measures (see Figure 6).

Organics management has the scope to be a pivotal climate solution, but it is only truly valuable if it provides long-term feasibility accessible to an entire community. Interestingly, there were limited strategies on food to people, food rescue, food to animals, and food waste reduction.

High-level opportunities for organics management climate actions include:

- Document environmental benefits, such as carbon emission savings, that have been achieved through the use of waste organics infrastructure
- Report the volume of food and organics that have been diverted from landfill
- Provide education and outreach inclusively to the community to improve organics collections
- Consider options for tracking environmental metrics on home composting solutions, and educate communities on tracking methods
- Promote and collaborate to expand markets for end products
- Develop an organics waste management plan, and help to demonstrate where actions can achieve ESG benefits
- Demonstrate the regenerative processes to our natural resources that compost and digestate provide in both carbon sequestration and soil improvements

#4: Waste-to-Energy (WTE) Recovery
The traditional waste hierarchy approach prioritizes waste prevention, reuse, and recycling before waste-to-energy recovery. Notably, many climate action plans stress WTE as a solution unless a zero-waste society can be reached. The plans included WTE solutions that can supply community electricity and heating needs and generate transportation fuels. WTE recovery opportunities using collected organic wastes were

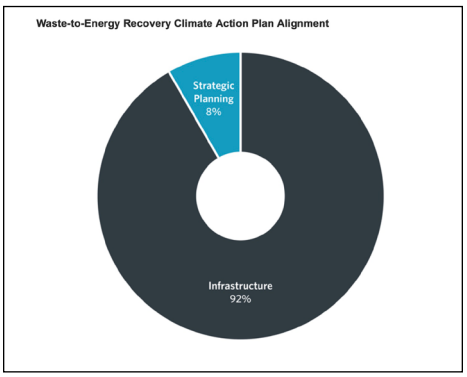


Figure 7

presented in the organics management theme (see Figure 7).

Strategic planning is key in finding where WTE can have the greatest ESG benefit. Solutions may consider environmental gains and outline opportunities for WTE systems to provide valuable social capital.

High-level opportunities for waste-to-energy climate actions are:

- Evaluate emission savings and energy potential from WTE solutions
- Evaluate and encourage WTE infrastructure that aids in the transition to provide sustainable fuels, and energy as a benefit to communities
- Evaluate emissions from current energy recovery centers, and outline opportunities for improvement
- Discuss and demonstrate where WTE solutions fit within circular economy strategies

#5: Landfill

Until widespread waste diversion and management infrastructure is available, landfills will continue to be crucial waste management infrastructure to ensure protection of public health. Climate actions for landfill focused on integrating climate and ESG benefits wherever possible (see Figure 8).

One of the greatest areas of opportunity is capturing landfill gases for environmental benefit. Captured landfill gases aren't emitted directly into the atmosphere. Instead, they're used to produce energy beneficial to the community. ESG benefits can also be defined and measured during the end-use planning phase for landfills, considering how the landfill and its surrounding space can be optimized to facilitate environmental and social improvements. Waste characterization studies continue to be vital to understand what materials are being disposed of in landfills, and where materials could ultimately be diverted to strengthen the circular economy and advance waste ESG potential.

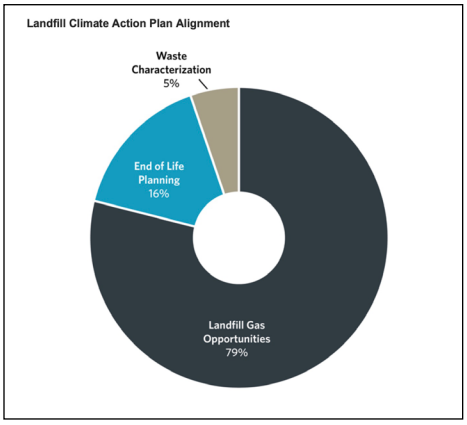


Figure 8

High-level examples of landfill climate actions are:

- Development of waste campus.
- Promote and deliver landfill gas capture and recovery options, including feasibility studies. Our research revealed 15 strategies focused on landfill gas development, upgrades, and maintenance. Methane emissions from landfills represent a proven and actionable opportunity to capture and use a significant energy resource.
- Prevent methane migration to use methane capture for beneficial use.
- Install solar arrays on closed landfill sites.
- Use closed landfills as recreational facilities for community benefit.
- When developing end use planning, help to define where there is scope for environmental and social improvements.
- Demonstrate and promote how captured landfill gases could be used by the local community and industries.
- Promote and deliver waste characterization studies and use the results to promote circular economy and zero-waste strategic thinking.
- Advise on daily landfill management that provides environmental benefits, and help to share these benefits, e.g., whether a daily cover can minimize methane emissions, or how clients could use these in their ESG related strategies.

Understanding the driving forces behind community climate actions is an integral part of creating long-term waste management solutions. The zero-waste mark isn't yet a reality, meaning there are opportunities for the waste industry to help develop strategies that address current needs while working toward climate resiliency. Organizational changes can help to achieve and embed new waste-related climate and ESG solutions.

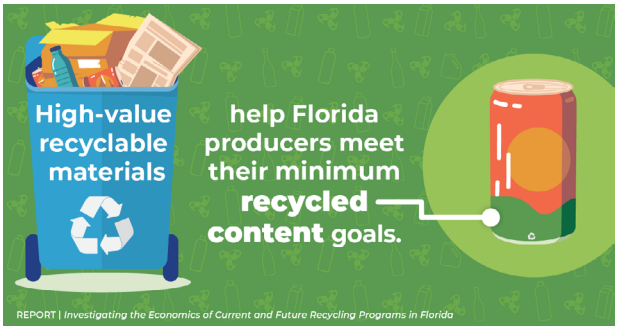
This research is a first step in understanding the driving forces behind community climate actions as an integral part of creating mutually positive long-term waste management solutions. Our waste industry experts are here to help navigate these challenges and assist with culture, leadership and sound strategic integration, allowing for reliable long-term planning of waste-related climate solutions.

This article summarizes research presented during a webinar presented by author Kate Bartelt, Senior Waste/Environmental Project Manager for HDR Engineering, Inc., and Kevin De Lange, Senior Vice President at HDR Engineering, Inc. To request a virtual or in-person presentation of the research for your organization, contact Kate Bartelt at (612) 202-3028 or Kate.Bartelt@hdrinc.com.

Investigating the Economics of Current and Future Recycling Programs in Florida

The Florida Recycling Partnership Foundation and the University of Florida recently announced the results of a study examining the environmental and business impacts of discontinued municipal recycling systems in Florida.

The study was conducted over a five-month period to measure the impact of discontinued recycling programs on Florida municipal budgets and waste management-based greenhouse gas emissions. It also evaluated the influence of recycling commodity prices on Florida's recycling system and explored alternative recycling models for use in the state.



Curbside Recycling Elimination
Over the last several years, recycling processing costs at materials recovery facilities have *increased from about $50 per ton to more than $100 per ton*, leading some municipalities to question if they should eliminate their recycling program altogether.

At least six cities in Florida, including Deltona, Bradenton, and Deerfield Beach, have ended curbside recycling for residents. Deltona, for example, ended its curbside recycling when costs to process and recycle paper products reached $80 per ton.

Among the report's key findings are that discontinuation of recycling systems offered little cost savings for cities while significantly increasing greenhouse gas (GHG) emissions. Instead, Florida municipalities should consider a market-based recycling system, which means targeting high-value recycling commodities, such as plastic bottles, jugs, and tubs; aluminum and steel cans; and newspaper and cardboard to generate savings and mitigate the impact of waste on the environment. The study also stated that recycling education is essential to a circular economy, and municipalities should work with producers to invest in educational initiatives.

The elimination of municipal recycling programs is not an effective strategy to contain costs and manage the environmental impact of waste. The elimination of recycling systems saves municipalities very little money—*only roughly $1 to $12 per household per year.* However, eliminating recycling systems increases annual household waste management-based greenhouse gas (GHG) emissions *roughly 1 to 20 times the current average*.

And when you look at cost, community curbside recycling systems only account for *16% to 26% of the overall cost* of waste management systems

in Florida. If the items are not being recycled, they must go somewhere else and that is usually a landfill.

The study stated that Florida municipalities should consider a *market-based recycling system* targeting high-value recycling commodities, such as plastic bottles, jugs, and tubs; aluminum and steel cans; and newspaper and cardboard. This strategy can ultimately produce cost and GHG emissions savings that are greater than eliminating recycling programs altogether.

According to the study, a market approach could generate significant savings of *$12 to $37 per household* and could reduce the annual household waste management-based GHG emissions by nearly 4 to 5.5 times the current average.

Benefits of Targeting High-Value Recycling Commodities
Prioritizing high-value recycling commodities can benefit Florida's recycling programs and its

environment. Metals, like aluminum and steel cans, represent less than 1% of Florida's recycling stream, yet they offer significant GHG emissions offsets if they are better prioritized for collection.

By recycling high-value recycling commodities, you can achieve the same GHG emissions reductions as recycling as much as 40% of the total waste stream if recycled at high rate—or the equivalent of taking 145,000 gas-powered vehicles off the road for one year.

Educational Programs are Vital to a Well-Functioning Market-Based Recycling System

Many Americans are confused about the recyclability of certain materials, which currently results in higher recycling costs. Municipalities should work with their residents and businesses; recycling processing and collection partners; and national, regional, and local environmental groups to invest in these vital education programs.

Recycling programs allow citizens to return plastic, metal, paper, and other materials to be broken down, redesigned, and reused for a less resource-and-emissions-intensive economy.

By collecting high-value recycling commodities, Florida could provide producers with enough recycled materials to meet *100%* of their recycled content targets.

"We wanted to better understand the economics of recycling in Florida and the relationship between cost and environmental benefits," said Florida Recycling Partnership Foundation Executive Director, Keyna Cory.

The Florida Recycling Partnership Foundation is a coalition of businesses and associations working to improve the state's recycling rates and systems. The foundation hopes to use the report's insights to improve the economic and environmental viability of recycling programs statewide.

"The recycling industry has reached a tipping point and going forward it will be important to determine a cost-effective recycling program that allows us to reduce our environmental impacts and make better use of our resources," said Dr. Malak Anshassi, one of the researchers.

For more information, contact Keyna Cory, Executive Director of the Florida Recycling Partnership Foundation, at (850) 728-1054 or e-mail keyna@flrecycling.org.

To learn more about the study, visit https://flrecycling.org/video-archive/

The **Florida Recycling Partnership Foundation** is a coalition of companies at the forefront of developing and adopting sustainable business practices that not only promote recycling but reduce and reuse our resources. Their mission is to educate policy makers, business leaders, and the public about the benefits of recycling. In the past eight years the organization has grown from five to 25 members and has conducted numerous recycling workshops/summits throughout the state. They are also responsible for coordinating Florida Recycles Week with the Florida Department of Environmental Protection.

For more information, visit www.flrecycling.org.

The **Sustainable Materials Management Research Group** is in the Department of Environmental Engineering Sciences under the UF Engineering School of Sustainable Infrastructure and Environment. The group focuses on using a combination of field, laboratory, and computational research to the solid waste management industry and community. The research interests include waste reduction, resource and energy extraction, recycling and beneficial reuse, emerging contaminants characterization and treatment, and sustainable disposal of various solid waste streams and industrial byproducts.

For more information, visit www.essie.ufl.edu/programs/sustainable-materials-management/.

Solid Waste Rate Analysis Lessons Learned from Recent Rate Setting

Giorgio Castro, M.Sc., Sarah Gustitus-Graham, Ph.D., P.E., Montana Meeker, and Marc Rogoff, Ph.D.

Fiscally sustainable solid waste management requires rate setting that is based on a current and thorough understanding of the costs of solid waste services. However, a desire to keep local government "lean and mean" can result in stagnant rates, despite rising costs for critical labor, equipment, and capital improvements. The dilemma of stagnating rates can affect systems that offer collection, disposal, processing, or a combination of solid waste services.

During the past two years, Geosyntec Consultants, Inc. was engaged by four Florida communities to conduct solid waste rate studies. The unique goals of each of these four rates studies illustrate the multi-faceted value of solid waste rate setting. Specifically, the utility of rate studies showcased by these four projects includes the following goals:

- Replenishment of solid waste reserves to ensure consistent service and coverage for necessary capital outlays,
- Ensuring the sustainability and efficiency of the waste management system well into the future,
- Assessing the fiscal opportunities provided by importing out-of-county waste, and the benefits of this revenue for local residents,
- Ensuring sufficient reserves for near-future facility expansion.

While each of these rate studies was undertaken to address one of these needs, an effective rate study can address one or all of these needs and more for your community.

The Essentials of Solid Waste Rate Making

The process of setting rates begins with a holistic look at a solid waste operation's fiscal health. Many solid waste organizations use an enterprise system of accounting, which divides revenues and costs out into separate cost centers. Figure 1 illustrates an example of separate accounts that may make up a solid waste enterprise fund. Each of these separate accounts should be assessed for historic trends that will guide projections of future cash flow. Revenue is typically gathered under one account, and may fluctuate because of customer numbers, sale of recovered materials, volume collected or disposed, fees imposed, and investment income. Program or system costs, such as salaries and benefits; operation and maintenance; administration; capital or vehicle replacement; legal fees; closure and post closure landfill care; and debt service are often separated into different cost centers and are affected by local and national economic conditions (i.e., labor and material costs, interest rates).

Historic balances and cash flows of each cost center become the basis of development for Pro Forma Models (Models) that are used to provide preliminary planning-level cost estimates. These cost estimates in turn become the basis for proposing appropriate solid waste rates. Typically, Models can be developed as spreadsheet programs that project annual revenues and costs to operate and maintain the solid waste system and provides a means for comparing alternative operational, institutional, and facility scenarios. These models can also address major capital and operational costs to operate the system.

To project revenues and costs into the future, key assumptions must be made regarding yearly solid waste quantities, demographic information, escalation factors for waste growth and costs, administration, personnel and utility costs, transport, and processing costs. Costs can be estimated using published information on the municipal system, experience with similar projects, input from the private solid waste industry, other published information, and planning-level cost estimates. Over- or under-estimation of these charges will distort the anticipated cost of the full program, and therefore projections should be conservatively developed.

Illustrative Florida Rate Studies

City of Pensacola

The City of Pensacola's Fleet and Sanitation Department (Pensacola) provides a variety of sanitation services, including once a week,

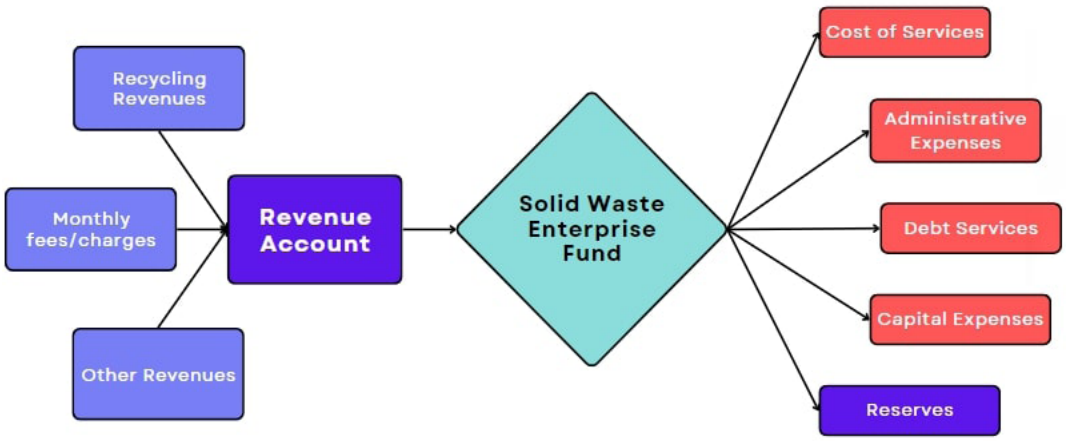


Figure 1 - Illustrative flow of funds for a solid waste system.
Figure courtesy of Geosyntec.

automated collection of single-family homes and commercial businesses for 20,934 customers. This rate study stands out among the four discussed, herein, for being based on 1) a city rather than a county and 2) a collection service rather than disposal service. Pensacola provides collection of household garbage, single-stream recycling, yard waste, and bulk waste collection. Other important services provided include container maintenance, a rotating city-wide bulk pickup event, event recycling, and storm debris cleanup and management.

At the onset of this study, Pensacola had a rate ordinance requiring the monthly garbage collection fee to be automatically adjusted based upon the percentage difference in the most recent annual Consumer Price Index (CPI). Despite this ordinance Pensacola's solid waste reserves had been gradually depleted over the past five years, and no longer complied a city policy to maintain a reserve balance of 15% of operating costs.

Geosyntec forecasted the annual projected revenue by considering variables including the CPI and customer growth rate. This projected revenue was compared to the revenue that would be required to replenish reserves and accumulate funds for upcoming capital outlays. The difference between the projected and necessary revenue was used to develop proposed rate increases that are projected to help Pensacola increase their resiliency and maintain their independence as a city-operated solid waste collection service. After further discussion with Pensacola staff and presenting to the City Council, an increased rate structure was adopted.

Escambia County
The Escambia County Waste Services Department (Escambia County) is a complex organization responsible for managing and operating a comprehensive solid waste management system. This includes a variety of different programs and facilities designed to handle various types of waste, including household hazardous waste, yard waste, white goods, and waste tires. Additionally, Escambia County operates a landfill gas-to-electricity program, a waste transfer station, and a citizen convenience center. However, the most notable aspect of Escambia County's system is the Perdido Landfill, which serves as a Class I and Class III disposal site.

Escambia County has traditionally financed capital improvements using cash rather than debt and intends to continue doing so in the future. The primary objective of the rate study was to develop a tool that would enable Escambia County to assess their financial standing under multiple projected scenarios. Specifically, the ability to retain sufficient reserves to cover rising operational costs while also funding reserves for a near-future

Greenfield landfill expansion was a key focus. Escambia County's primary source of revenue is derived from tipping fees at the landfill and transfer station, which have historically been sufficient to cover operations and reserves. To assess whether this would be sustainable at current rates, Geosyntec conducted a five-year financial forecast including three potential scenarios with varying CPI and tonnage projection inputs.

This rate study was unique for the large, upcoming capital investments proposed for design, permitting, and construction of new landfill cells in an adjacent Greenfield property. The model included flexibility that enables the County to adjust macroeconomic indicators directly to continually assess their projected position as trends in inflation, labor shortages, and tonnages continue to evolve. The Model from this study has become a comprehensive financial tool that enables Escambia County to continue to assess the fiscal sustainability of their solid waste system.

Putnam County

Putnam County's Sanitation Department (Putnam County) includes an active Class I landfill, citizen convenience centers, and long-term care (LTC) and maintenance of three closed landfills. The system is funded in large part by assessments levied on Putnam County residents, as well as other various fees, sales of recyclables, and returns on investments. In fiscal year 2019, Putnam County also began accepting out-of-county waste, which added an additional revenue stream to the system.

At the onset of the rate study, Putnam County was in the unique position of having decreased solid waste assessments for residents over the last several years. This benefit to citizens had been made possible thanks in large part to the revenues from the introduction of out-of-county waste. The primary goal of this rate study was to assess appropriate rates and quantities for out-of-county waste that would prevent raising the Putnam County resident's waste assessments in the next 10 years. An additional goal was to determine the feasibility of escrowing for closure and all 30 years LTC for their facility by the end of the landfill's lifespan. Successfully escrowing the entirety of required LTC should prevent Putnam from having to levy a LTC-funding tax or assessment on citizens after the closing of the landfill.

Revenue projections were determined based on population estimates for Putnam County, as well as tonnage projections for out-of-county waste based on historic and current trends. A key feature of the Putnam model was an exhaustive table of rates for in-county assessments, out-of-county tipping fees, and other service fees was developed that allowed Putnam County staff to customize rate structures. The projected fiscal impact of each customized rate structure was summarized to allow staff to determine rates that were both palatable to in- and out-of-county customers, and beneficial to Putnam's fiscal health.

Santa Rosa County

Santa Rosa County's Solid Waste Department (Santa Rosa County) owns and manages multiple components dedicated to processing and disposing Class I and Class III wastes at the Santa Rosa County Central Landfill. The Class I and Class III cells at the Central Landfill are the sole Class I and III disposal areas currently available in Santa Rosa County. Santa Rosa County anticipated an increase in costs outpacing the existing Solid Waste rate increase structure and contracted with Geosyntec to develop an assessment of the impact of several different rate increase structures on the fiscal health of the solid waste system.

Santa Rosa County provided historical data and present-day context that Geosyntec used to create a baseline scenario for comparison. Some regionally specific factors that were added to this baseline included:

- Santa Rosa County saw an unusually high influx of waste in 2020 and 2021 because of Hurricane Sally. Geosyntec adjusted the model's tonnage projections to correct for this anomaly.
- Santa Rosa County anticipated that a significant portion of Class III waste may be diverted in 2023 to external facilities. Geosyntec created options within the model allowing the user to adjust the model's output based on anticipated or actual diversion of different types of waste year-over-year.

Geosyntec's model compared three different rate structures and

a potential per-ton Environmental Fee (specifically created to fund environmental programs separate from typical solid waste operations) to the designated baseline. The rate structures were developed through conversations with Santa Rosa County staff and analysis of the Central Landfill's needs. In particular, high upcoming capital costs are needed for expansion and facility development. The analysis needed to be robust enough to aid County staff in their internal decision-making and strategic planning process, and the output needed to be comprehensible to stakeholders and decision-makers without solid waste backgrounds, including the County Board of Commissioners and the public.

Geosyntec used multiple mediums to deliver this analysis to different stakeholders: a detailed financial model was provided to County Staff and the Board of Commissioners, and summary documents and presentations were delivered to the public. After Santa Rosa County and Geosyntec staff presented the results to the Santa Rosa County Board of Commissioners, one of the rate structures proposed was enacted by the Board, and the $1 per ton Environmental Fee was approved.

The Benefits of Rate Studies

These four examples of solid waste rate making demonstrate how effective solid waste management rate studies are essential for the long-term sustainability of waste management systems and can serve multiple purposes.

In addition to the strict analysis of finances in a rate study, the team's extensive experience in the industry enables identification opportunities to improve the efficiency and effectiveness of clients' solid waste management services. Through this work, clients have achieved cost savings in a variety of ways from improving the routing and scheduling of collection trucks, to reducing waste through recycling and other diversion programs, and in some instances were able to implement various sustainability initiatives.

Lastly, periodic evaluations of the solid waste rates can also help municipalities provide equitable services to all customers. For example, by considering the impact of the solid waste rate on different segments of the population, such as low-income families and senior citizens, municipalities can facilitate a more affordable rate structure. They can also consider alternative pricing structures, such as volume-based pricing or tiered pricing, to ensure that the rate reflects the actual cost of providing services to each customer. A rate study may also be crucial when considering privatizing a municipal solid waste operation.

A holistic approach, combined with conservative projections, can help ensure realistic estimates of costs and revenue. An *effective* rate study may aid in appropriately funding solid waste services; preventing substandard service levels; replenishing solid waste reserves; increasing flexibility; identify fiscal opportunities; and promote conscious rate setting. This multi-faceted tool will serve any solid waste system in a variety of ways.

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The authors would like to thank our four clients: Amy Miller, Deputy City Administrator, City of Pensacola, FL; Don Seitz, Solid Waste Director, Escambia County, Florida; Michael Schmidt, Environmental and Public Works Director, Santa Rosa County, Florida; and Jay Tilton, Solid Waste Director, Putnam County, Florida.

Member News

Hillsborough County and Goodwill Partner to Divert Waste with New Donation Program

Danny Gallagher

For the first time, Hillsborough County Solid Waste Management has partnered with Goodwill Suncoast (Goodwill) to make donating easy by accepting items that can be saved from disposal and repurposed. Through the Donation & Waste Diversion Program (DWDP), residents can drop off their trash and donations in one location. The new DWDP takes place at one of Hillsborough County's five Community Collection Centers (CCC), the South County Solid Waste Facility.

Waste Diversion Pilot A-Frame Board

The CCCs are disposal sites Hillsborough County manages where residential solid waste customers can dispose and recycle items that are not collected curbside. Upon arrival to the CCC, residents are informed which items can be accepted for donation, recycling, or disposal.

The idea for this program began when solid waste staff noticed quality items being trashed by residents at the County's CCCs and reusable goods were unnecessarily making their way to the landfill. Discussions took place with Goodwill, which led to a partnership that helps residents save time while making a positive social and environmental impact.

The DWDP, launched in September 2022, and has served as a win-win for both organizations. Diverting these items for donation saves precious landfill airspace, relieves capacity constraints on the waste-to-energy facility, saves natural resources, and helps reduce emissions. The donated items are reused and aid people in need too. Goodwill invests between 85 to 90% of its operating budget towards its mission services annually. Already, over 468 donors have donated more than 7,724 items to Goodwill at the South County CCC, diverting more than 17,540 pounds of material from disposal.

Acceptable donations include clothing, shoes, accessories, home décor items, kitchen wares, tools, toys, small furniture items, and electronics. Goodwill provides tax deduction receipts onsite after each donation. The DWDP does not accept mattresses, televisions, computer monitors, appliances, large furniture, or any broken or damaged items deemed not saleable. Conveniently,

Goodqill staff donation.

the South County CCC accepts for free disposal all these items and more from Hillsborough County solid waste customers.

The DWDP operates during the same hours as the South County CCC: 7:30 a.m. to 5 p.m. Monday through Saturday. To donate or dispose of items, Hillsborough County residents must be a residential solid waste customer.

Before this program, donors unintentionally brought trash to Goodwill and residents brought reusable goods for disposal to Hillsborough County. With the success of the DWDP, Hillsborough County and Goodwill Suncoast hope to expand the program to other County CCCs and be a model for other municipalities

Danny Gallagher, E.I. is the Recycling Coordinator from the Hillsborough County Solid Waste Management Department. Danny can be reached at (813) 221-6549 or GallagherD@HCFLGov.net.

For more information, visit HCFLGov.net/Recycling.

New River Achieves Another First in Florida

Joel Woolsey, Carol Sawyer, PE, and Ken Vogel, PE

Since its inception in 1992, the New River Solid Waste Association (NRSWA), Florida's first publicly owned, multi-county solid waste management facility formed by Baker, Bradford, and Union Counties, has been committed to providing excellent services to its customers and to using innovative industry-leading practices to optimize operations and maximize environmental protection. They work closely with a leading expert in solid waste and sustainable materials management, Dr. Timothy Townsend, PE, with the University of Florida, to collaborate on research projects and pilot programs. NRSWA is forward thinking and committed to being an industry leader.

NRSWA's Renewable Natural Gas (RNG) project is the most recent example of their commitment to innovation and contribution to waste conversion and energy recovery. This project is the first in Florida to convert landfill gas (LFG) into pipeline-quality natural gas. It is also the first landfill to interconnect to the Florida Gas Transmission's interstate pipeline and inject processed LFG. New River's LFG is treated to meet the strict pipeline-gas specifications before being transmitted via 6 miles of high-pressure pipe from the landfill to the pipeline interconnect. The RNG is primarily used to fuel OPAL Fuels' transportation customers at their fueling stations via the Peoples Gas distribution system. The RNG plant has a capacity of 2,500 scfm of LFG, which when processed will produce approximately 5-million gasoline gallon equivalent (GGE) per year of RNG.

This project did not happen overnight and without overcoming many obstacles. NRSWA has been envisioning and working toward a renewable LFG project for well over 10 years. NRSWA's vision has always included the conversion of LFG to vehicle fuel. Various project proposals were evaluated over several years but finding the right partner and team that could bring a project to completion proved to be very challenging. In 2018, Fortistar LLC (now OPAL Fuels Inc.) responded to NRSWA's request for proposals for a renewable gas project. OPAL Fuels is a leading vertically integrated producer and distributor of RNG. Upon reviewing OPAL's proposal and the team they had in place, it became clear to NRSWA that this was the team who could bring NRSWA's long standing vision to reality. The process from proposal acceptance to the start of operations included many obstacles, but in April 2022 the RNG plant began operations. During this four-year process, the team of NRSWA, OPAL Fuels, and TECO Peoples Gas was fully invested in the project and worked through the many regulatory and design challenges, stringent pipeline specification requirements, contractual issues, and, ultimately, construction during a pandemic.

RNG plant at the New River Regional Landfill in Raiford, FL.

The conversion of LFG to RNG directly benefits the communities that NRSWA works with and manages waste for. The overall carbon footprint associated with the management of the communities' solid waste is reduced. The RNG project contributes to the environmental goals of NRSWA member counties and associated customers. For example, the City of Gainesville and Alachua County, NRSWA's largest customers, have aggressive waste reduction, reuse, and recycling goals. The conversion of LFG to RNG allows the City and County to move closer to their goals. Similar objectives are in place for the University of Florida, which also disposes of waste at the New River Regional Landfill. All these communities benefit from the RNG project by being good environmental stewards. In addition, all these communities have aggressive sustainability programs and aspire to reduce emissions and thus their carbon footprint. The conversion of LFG from their waste by means of the New River RNG plant allows them to continue to progress toward these goals and is an important part of their comprehensive sustainability programs.

NRSWA has had a vision for converting LFG to RNG for many years now and has worked tirelessly to bring this vision to a reality despite many saying it could not be done. NRSWA has been fully involved in every aspect of the development of this project and is proud to lead the way in Florida yet again. This first of its kind project in Florida is now paving the way for similar projects to begin development—all using New River as a blueprint for success.

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SWANA Florida Sunshine Chapter

Sponsorship Opportunities

April 28-29, 2023 – City of Tampa

Register Online at https://cvent.me/KXYD4Q

By actively supporting this event, your organization will benefit by strengthening its prominence as a leader in the solid waste industry and by increasing your network of contacts and established partners within SWANA.

ALL sponsors will receive the following benefits:

- Your logo on event signage/banners, promotional materials and the SWANA FL website
- Lunch on competition day
- Special recognition during the awards banquet

SPONSORSHIP OPPORTUNITIES:

❑ **Diamond Sponsor** ($3,500) – also includes recognition on participants' competition t-shirts; space at competition sites to display products or equipment; four awards banquet tickets; premium logo placement at Saturday banquet; and up to two minutes to address attendees during banquet
❑ **Ruby Sponsor** ($3,000) – also includes recognition on participants' competition t-shirts; space at competition sites to display products or equipment; four awards banquet tickets; and premium logo placement at Friday evening reception
❑ **Platinum Sponsor** ($2,500) – also includes recognition on participants' competition t-shirts; space at competition sites to display products or equipment; four awards banquet tickets; and premium logo placement
❑ **Gold Sponsor** ($2,000) – also includes recognition on participants' competition t-shirts; space at competition sites to display products or equipment; and two awards banquet tickets
❑ **Silver Sponsor** ($1,500) – also includes recognition on participants' competition t-shirts; and two awards banquet tickets
❑ **Bronze Sponsor** ($1000) – also includes recognition on participants' competition t-shirts

IN-KIND DONATIONS:

❑ Water, sodas, coffee, donuts, bagels, juice, chips, ice, etc.
❑ Breakfast meal, lunch meal, etc.
❑ Trash and recycle containers, portable toilets, golf carts/ATVs, bleachers, etc.
❑ Shirts, hats, etc.
❑ Other ideas welcome

Sponsorship Deadline: March 31, 2023

2023 SWANA FL Summer Conference

Save the Date

July 23-25, 2023

Fuel up your tank, check the oil, and warm up the tires to *Get In the Fast Lane* because the 2023 SWANA FL Summer Conference is coming to the Hilton Daytona Beach Oceanfront Resort in July 2023. You won't want to miss this opportunity to network with some of the best minds in the solid waste industry, earn continuing education hours and enjoy the beautiful and exciting Daytona Beach. Registration will open in April!

Call for Papers

Interested in presenting at the 2023 SWANA FL Summer Conference? Join us as a speaker and share your projects, innovative ideas and success stories. If you have information to share with colleagues and want to be part of this exciting event, submit your abstract by April 7, 2023.

Abstract Submission Details

SWANA FL Scholarship Program

Every year SWANA FL awards up to two scholarships, each valued at $2,000 per student, per school year. The application deadline is May 1, 2023. Information about the student scholarship and application guidelines can be found on the SWANA FL Website.

Three Additional Scholarships Are Available

In addition to the Florida SWANA student scholarships, three additional scholarships are available through SWANA International.

To apply for these scholarships, students need to submit their complete application to info@swanafl.org by May 1st. The Florida Chapter will review and score the applications based on eligibility criteria provided in the application packet. After scoring, the Florida Chapter will submit one candidate per category to SWANA International for consideration.

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Upcoming SWANA FL Chapter Events

2023 Road-E-O
April 28-29
Tampa, FL

2023 Summer Conference
July 23-25
Daytona Beach, FL

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