SFRPC/TCRPC Regional Conference
Solid Waste Management

"Challenges and Opportunities"

Highlights from October 21, 2022
Florida Atlantic University
Boca Raton, Florida

SFRPC
South Florida Regional Planning Council
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TREASURE COAST TCRPC REGIONAL PLANNING COUNCIL
Bringing Communities Together · Est. 1976

Solid Waste Conference was a Huge Regional Success!

The South Florida and Treasure Coast Regional Planning Councils hosted a 7-County Conference on Solid Waste Management Challenges and Opportunities in Southeast Florida. The Conference was held on Friday, October 21, 2022 at Florida Atlantic University in Boca Raton.

Featured presentations were given by county professionals and other subject matter experts regarding the current state of solid waste management practice in Southeast Florida, new technologies and best-practice approaches, and opportunities for greater regional collaboration to manage an ever-growing supply of solid waste.

Please visit our Solid Waste Management Regional Conference webpage for more information, meeting materials, recordings, and presentations. Provided below is a brief overview of this very successful event.

"Solid Waste Management is important to the seven counties in the RPCs' planning areas. The amount of trash that we're generating increases each year while places to store our leftover waste decreases. What will we do when our landfills fill up? What about the methane generated by landfills? Are there new technologies that we can use? Is burning effective and ecologically sound? Are we going to be able to recycle more? And how are we going to pay for all of this?"

~ Senator Steve Geller, SFRPC Chair

"It's important that the Regional Planning Councils jointly discuss this issue because Solid Waste Management is truly a regional challenge requiring coordination and collaboration to address. Each of us will gain insights to bring home and apply regionally.

~ Cathy Townsend, TCRPC Chair

Regional Overview

Isabel Cosio Carballo, SFRPC Executive Director
Tom Lanahan, TCRPC Executive Director
[view presentation]

On behalf of the South Florida and Treasure Coast Regional Planning Councils (RPCs) we thank you for your interest in this very important conversation and continued support of the Councils efforts to make the South Florida region a better place to live and thrive.

According to the Department of Environmental Protection, the Southeast Florida regional population served in 2020 was 6,951,723. Data reflects that the Municipal Solid Waste (MSW) collected and recycled was as follows:

Total Tons Collected Per Year	13,601,628
Total Tons Recycled Per Year	4,455,829
Single-Family Tons Collected Per Year	4,157,429
Single-Family Tons Recycled Per Year	1,207,420
Multi-Family Tons Collected Per Year	2,163,337
Multi-Family Tons Recycled Per Year	431,606
Commercial Tons Collected Per Year	7,280,862
Commercial Tons Recycled Per Year	2,816,803

The State of Florida collected a total of 47,064,583 tons of solid waste of which 19,572,559 tons were recycled. Florida has an average recycling rate of 42%. Data received from a survey produced by the RPCs and submitted by the

Solid Waste Management Directors for each County reflects the challenges facing Southeast Florida:

South Florida Regional Planning Council			
October 2021	**Miami-Dade**	**Broward**	**Monroe**
Landfill Capacity Remaining	9.8 Million Cubic Yards	1.03 Million Cubic Yards	No Landfill
Projected Depletion Year *(absent hurricane)*	2026, 2032	2030	0

Treasure Coast Regional Planning Council				
October 2021	**Palm Beach**	**Martin**	**St. Lucie**	**Indian River**
Landfill Capacity Remaining	26.5 Million Cubic Yards	No Landfill	12.7 Million Cubic Yards	12.3 Million Cubic Yards
Projected Depletion Year *(absent hurricane)*	2054	0	2067	2086

CONVERTING WASTE-TO-ENERGY

Joe Kilsheimer, Executive Director
Florida Waste-to-Energy Coalition
[view presentation]

What is Waste-to-Energy (WTE)?

Waste-to-Energy (WTE) is critical infrastructure for the state of Florida and, may be one of the State's best available environmental tools. WTE is the direct combustion of municipal solid waste in a facility that uses extremely high temperatures – around 1,500 to 1,800 degrees Fahrenheit – to turn garbage into a chemically inert ash, reducing the volume of solid waste by 90%. The heat is used to create steam to generate electricity hence the term "Waste-to-Energy."

The Economics of WTE

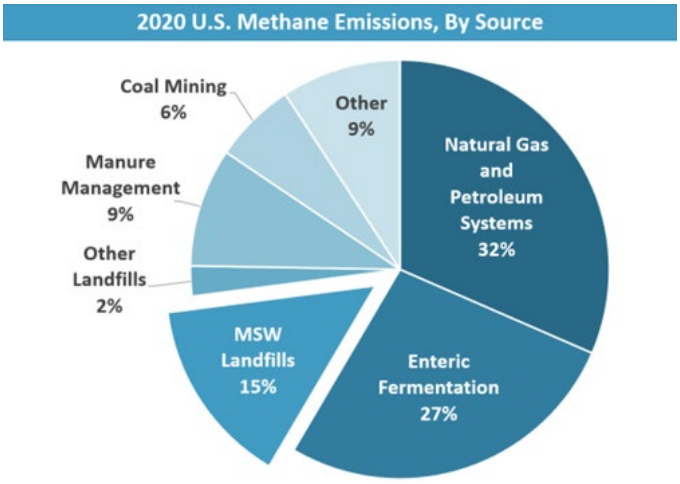
Financially, Florida's WTE facilities are supported by three streams of revenue: tipping fees, electricity sales, and the sale of recyclable metals recovered from the ash. Federal laws (PURPA) require utilities to purchase power from "qualified independent power producers," (i.e., WTE facilities), but allows states to determine the pricing formula, also known as the "standard offer."

Over the past 20 years, changes in how Florida calculates the basis of the standard offer have dramatically reduced what utilities are willing to pay for WTE-generated electricity.

Why does Florida have 10 WTE facilities?

One of the reasons is because in Florida, counties are responsible, by State Statute, for the operation of solid waste facilities that meet the needs of their residents. This is a responsibility that counties cannot escape, and it works better when cities and counties are collaborating and working together to plan our solid waste future.

Methane emitted by landfills is also a significant contributor to global climate change. New data shows that methane is even more damaging than previously thought.



Source: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020 U.S. EPA 2022

Benefits of WTE

In 1977, the Florida Legislature enacted The Florida Resource Recovery Act which mandated that the State's 19 most populous counties study WTE as part of their Solid Waste Master Plans. The counties in which WTE provides the primary method of solid waste disposal are Florida's most populous and economically vibrant economies. Land resources for new landfills are

dwindling and in some cases there's simply no more room to place a landfill in the area.

- WTE communities comprise 48% of Florida's population.
- Florida's WTE communities comprise more than half of the state's economy.
- Florida's 10 WTE facilities annually;
  - ✓ Avoid the landfilling of 6.5 million tons of solid waste.
  - ✓ Reduce the volume of solid waste by 90%.
  - ✓ Reduce greenhouse gas emissions by 6.5 million tons of CO_2.
  - ✓ Recycle 212,000 tons of metal; enough to build 156,000 cars.

Waste-to-energy facilities provide a safe, technologically advanced means of waste disposal that reduces greenhouse gases, generates clean energy, and recycles metal. It is a widely recognized technology that can help mitigate climate change. This is because the waste combusted at a WTE facility doesn't generate methane, as it would at a landfill; the metals that would have been sent to the landfill are recovered for recycling instead of being thrown out; and the electricity generated offsets the greenhouse gases that would otherwise have been generated from coal and natural gas power plants. WTE facilities are the only form of energy generation that reduces greenhouse gases. Additionally, the energy produced at waste-to-energy facilities is reliable baseload power, meaning that it is generated 24 hours a day, seven days a week. That provides the opportunity to not only sell electricity onto the grid, but also provide steam delivered to houses, public buildings, and industry.

Florida's Recycling Rate and Disaster Debris Management

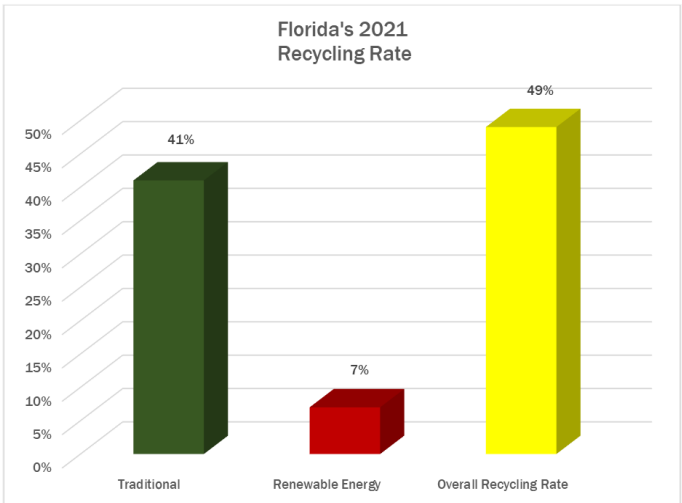
Allanah Irwin, MS, Environmental Manager Solid Waste
Florida DEP, Southeast District
[view presentation]

Disaster debris management locations are temporarily authorized solid waste management processing sites, subject to an Emergency Final Order. There are currently 1,030 preauthorized sites on file, which must be processed every year. This allows our Counties to receive FEMA funding during times of natural disasters.

It is essential to note that disaster debris management numbers are not a part of the numbers provided in Florida's recycling rate and solid waste management. Disaster debris can rapidly consume landfill capacity. The average life span of the Class 1 Landfills in the Southeast Florida region is currently 24 years, excluding disasters, so we need to act now. Section 403.706 of the Florida State Statutes:

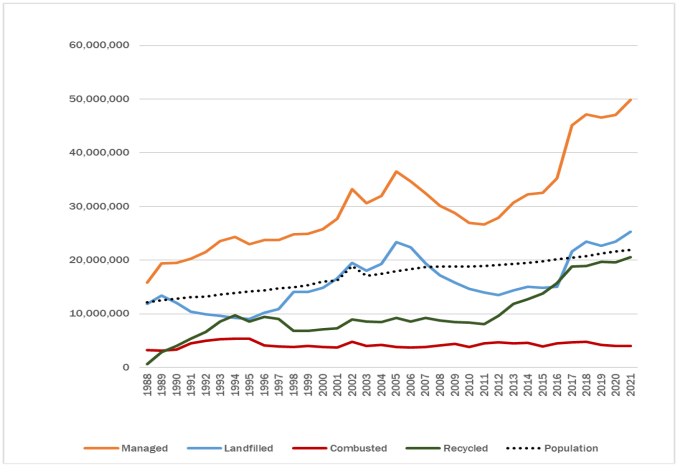
- Established the 75% recycling goal for municipal solid waste by 2020.
- Directed all counties to report their recycling progress annually.
- Established interim recycling goals: 40% by 2012; 50% by 2014; 60% by 2016; and 70% by 2018.
- Directed counties, over 100,000 population, to develop a plan if the county does not achieve the interim recycling goal.
- Directed the state to identify additional programs or statutory changes if the interim recycling goals are not met.

The statewide overall recycling rate, including renewable energy recycling credits, decreased from 50% in 2020 to 49% in 2021. The statewide traditional recycling rate, excluding renewable energy recycling credits, decreased from 42% in 2020 to 41% in 2021.



Source: Department of Environmental Protection

Solid Waste Management in Florida 1988 – 2021



Source: Department of Environmental Protection

Available Recycling Programs

- Guardians of the Environment
  The Guardians of the Environment curriculum was developed at the direction of the Florida Legislature with the Department of Environmental Protection. Florida science educators from across the state collaborated to create original lesson plans aligned to the Next Generation Sunshine State Standards (NGSSS) in Science.

- F.O.R.C.E. Florida Organics Recycling Center for Excellence
  FORCE is Florida's Organics recycling effort involving the Florida Department of Environmental Protection (FDEP), and public/private researchers. The mission of FORCE is to provide a framework to promote organics recycling and serve as a catalog of information on statewide efforts to streamline compost processing, research, demonstration, marketing, and education in Florida.

NEW TECHNOLOGIES

Dave Robau, Executive Director, Gulf Coast Energy Network
[view presentation]

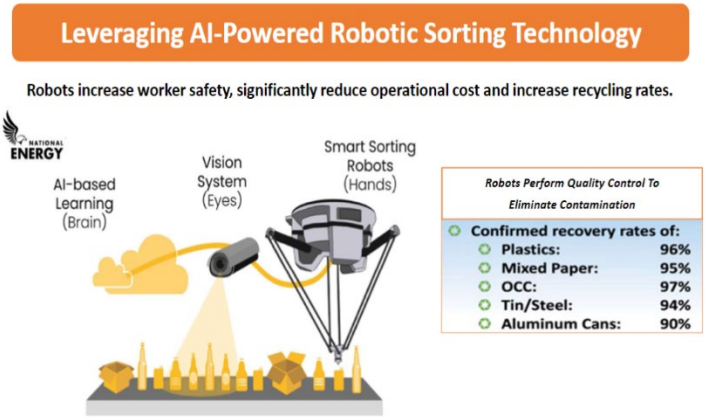
Solid Waste is a Global Challenge!

Simply burning garbage is not the best idea, so the Gulf Coast Energy Network commercialized advanced solid waste processing technologies. Through our work with the Department of Defense we built the first-in-the-Air Force Plasma Gasification technology to safely process 10 TPD of Municipal Solid Waste. It will ultimately provide energy security for warfighters in the battlefield.

We are seeing more cardboard and plastics in our packaging materials – so we unpacked the power of garbage! All packaging materials should be recyclable or compostable. It they're not, we recommend not introducing them into the world.

Let's talk ROBOTS!

We have incorporated them into the solid waste community. We could potentially eliminate the need for solid waste landfills. We can reduce labor, provide a safer environment, use the same staff, but utilize them as technicians instead, receiving data and studying the amount and sources of solid waste being run through the system. Today, because of technological advances these robots can now sort waste into 50 different categories which boosts their economic viability.



Source: National Energy & Golf Coast Energy Network

Did you know?
Landfills are the 3rd largest single point source of greenhouse emissions for methane gases. What are landfills doing to your road system? Do you know how much a garbage truck weighs or what their fuel efficiency is? It's less than 3 miles to the gallon. An average garbage truck can travel up to 500 miles per day. Think of the impact to your roadways. Did you know that when Hurricane Katrina hit New Orleans, 12 years of their landfill capacity was gone in a week. We must focus on waste reduction.

Advanced Biosolids Management & Nutrient Recovery

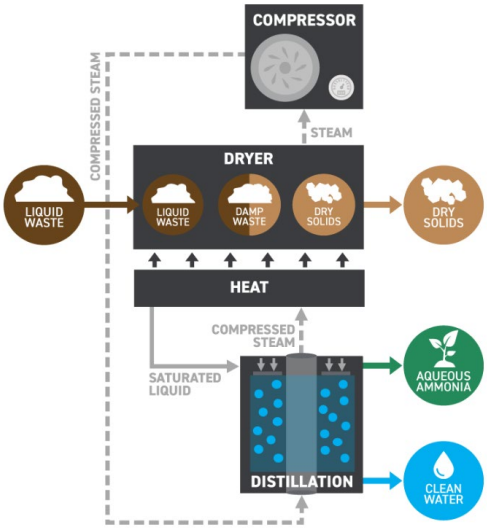
Stanley Janicki, Chief Revenue Officer, Sedron Technologies
[view presentation]

How can we take Florida to the next generation of biosolids management and enable the complete elimination of land application of biosolids, reduce the landfilling of biosolids, produce renewable energy, and produce climate smart precision fertilizers that farmers and the agricultural community in Florida can use?

The tremendous population growth of Florida has resulted in many wastewater treatment plants receiving increased nutrient loading. Once received, these increased nutrients are difficult to remove from the plants. This causes further issues – such as the quality of their biosolids and where the biosolids go. Currently one-third of Florida's 1.7 million tons of wet biosolids go into landfills. Another one-third is land applied creating incredible deleterious impact in the environment – such as nutrient pollution from runoff. The last issue of concern is the carbon footprint, not just of water and wastewater but the other industries in Florida. Cement production and general energy production, as examples, all have a tremendous carbon impact. All of these issues can be solved with the right tools!

Introducing the VARCOR™ System
Sedron Technologies' VARCOR system provides a highly efficient solution for processing liquid waste streams that concentrates and recovers the outputs into pathogen-free solid and liquid fractions. This approach to treatment is applicable to liquid waste streams such as:

- Wastewater biosolids
- Wastewater side stream nutrient removal (both nitrogen and phosphorus)
- Dairy waste
- Low Carbon Fuel Standard (LCFS) digestate
- Raw septage



Source: Sedron Technologies

The VARCOR can process any liquid waste stream with suspended or dissolved solids in it. This allows the VARCOR system to be 30 times more efficient than conventional evaporation. It is a complete holistic liquid waste handling system that solves nutrient pollution by stopping the land application of biosolids while simultaneously producing renewable energy and providing the Florida agricultural industry with precision, climate-smart, nitrogen fertilizer unbundled from phosphorus. Industrial scale facilities are under construction and in the planning stage now.

Recovered Materials - Recycling

Ramana P. Kari, P.E., BCEE, Chief Engineer, Solid Waste Authority of Palm Beach County
Michael W. Ruiz, Assistant County Administrator, Broward County
[view presentation]

Recovered Materials vs. Recyclable Materials

Chapter 62-701 of the Florida Administrative Code (FAC) defines Recovered Material as metal, paper, plastic, textile, or rubber materials that have known recycling potential, can be feasibly recycled, and have been diverted and source separated or have been removed from the solid waste stream for sale, use, or reuse as raw materials, whether or not the materials require subsequent processing or separation from each other, but does not include materials destined for any use that constitutes disposal. Recovered materials as described above are not solid waste.

Recyclable material means those materials which are capable of being recycled and which would otherwise be processed or disposed of as solid waste.

Role of Government

Reduce
- Extended Producer Responsibility (Policy)

Reuse
- Sharing (Policy and Practice)
- Right to Repair (Policy)
- Composting (Practice)

Recycle
- Goals (Policy)
- Materials Recovery Facilities (Practice)
- Collection Incentives vs. Enforcement (Practice)
- Contamination Reduction (Single Dual Stream)

Reduce, Reuse, Recycle, and RETHINK???

Think outside the recyclable collection bin
- Residential recycling is only a small % of the total.

Construction & Demolition (C&D) Debris Recycling
- Achieves diversion from the landfill.
- Sends valuable material for reuse and avoids mining of natural material.
- Increases recycling rates.

Vegetation recycling
- Achieves diversion from the landfill.
- Beneficial reuse.

Beneficial Use of WTE ash-derived aggregates (ADA)
- Avoids mining of natural material
- Reduces landfilling of ash

Advanced Metals Recovery (AMR) from WTE ash
- Additional revenue stream.
- Improves ADA quality.

Summary
- Choose a system that works for your community.
- Align recyclables with markets and seek value.
- High collection, capital, O&M, and disposal costs necessitate a cohesive approach (not a fragmented system). Economies of scale!
- Need branding and consistent messaging.
- Focus on low-hanging fruits (C&D debris, vegetation).
- Establish short- and long-term approaches.
- Set realistic goals.

Regional Collaboration & Coordination

A 7-County Expert Panel "Talks Trash"

Broward County Commissioner Beam Furr, Moderator
- Challenge: When you think about what you need, think about what else your County needs beyond the solid waste community. If we are ever going to

think about bringing solid waste manufacturing to the Region, we need to pool those things together.

Himansu Mehta, Utilities and Biosolids Department Managing Director, Indian River County

- What You Need: Sharing lessons learned would be helpful. Our County was once part of the Central District and we valued meetings with the Directors. We need more collaboration and to share our processes and methodologies. We need more help in educating the youth, possibly using digital devices since we live in a digital age and kids know a lot of these devices.
- What We Have: We have great Commissioners who back our ideas.

Rebecca Olson, Assistant Director of Public Utilities & Solid Waste, St. Lucie County

- What You Need: We need marketing assistance. Education is important to help with contamination rates and much more. We also need a glass offtake. We do have a glass processing machine which breaks bottles down into sand, and we have a lot of it, but we need to give the material that is produced away because we have an abundance.
- What You Have: Our board is very supportive, and we have been able to get agreements approved. We also have an offtake of small generators for plastic milk jugs. If it is something that you have enough of, and you don't want to put it in your landfill, we will take it & recycle it.

Sam Amerson, Utilities and Solid Waste Department Director, Martin County

- What You Need: We have difficulty getting commercial recycling numbers. The recycling rates are not as accurate as they could be.
- What You Have: Our County Commission listens & supports staff. No idea is too crazy or outlandish. They want us to keep thinking outside the box. We have landfill & transfer station capacity. We also have plans to build a single stream transfer station adjacent to our current transfer station to open up the tipping floor for additional garbage. On a side note, we recently went through a competitive bid, with three bidders. Our board was not interested in the lowest price, but the level of service! It may have cost more, but we have a duty to our residents. Today, all around, our residents are satisfied.

Dan Pellowitz, Solid Waste Authority Executive Director, Palm Beach County

- What You Need: We have 30 years with waste-to energy experience and need to do better at educating the community on what we have and what we do. Additionally, it would also be helpful to have additional standby reciprocal agreements, we currently have agreements in place with Okeechobee and the Jet Landfill. Lastly, our landfill is set to expire in 2054. In this line of business, if you're less than 10 years away, then you're already behind, so we will be looking to extend the life of our landfill.
- What You Have: We have excess capacity in our recycling center and have offered our assistance, in a pinch, if someone needs it, we can assist quickly.

Kevin Kelleher, Assistant County Administrator, Broward County

- What You Need: We need a structure built to address the issue collaboratively. We currently have an energy plant with little life left, but we need newer options and more space. We need a material recovery facility (MRF) as well, hopefully we can work collaboratively.
- What You Have: We have 31 Cities & a County Commission that recognizes that this is a problem. A working group has been created to address this issue and form a Countywide solid waste authority.
- Thoughts on Education: We do not believe people generally understand the totality of the problem. Elected officials are aware, but there also comes a cost, then there are political ramifications & it results in an uninformed community. With respect to the elected fronts, we believe we can address the commercial community which will help tremendously, but then the cost is passed on to the community, but it will help the problem

significantly. It is good to prepare the public for policy!

Michael Fernandez, Director, Miami-Dade County Department of Solid Waste Management

- What We Need: Capacity is a huge issue for Miami-Dade County. We have our development boundary, but we are limited on space.
- What You Have: We have a waste-to-energy facility. It has expanded our capacity. It is also still a need in other areas, and since recycling is expensive, it is necessary more so than landfills. We must recycle better! We don't have a county-owned materials recovery facility (MRF), but they are controlled by the private sector, therefore maybe a partnership is appropriate.
- Thoughts on Education: There's a misconception that we landfill everything. We are the masters of waste, and we manage 1.8 million tons but that's only one-third of what's really out there. In actuality there is a total of 5 million tons that we don't even touch. One thing we had previously decided is to add language to our trucks that your trash in turned into energy, we've done marketing, youth education, and commercials and it has helped open the eyes of our residents. Messaging is important. Secondly, our recycling program is important, but cities also have their own program, and it can get very confusing for the public. We are attempting to create an app to let people see what is and isn't a part of our program. Standardization would be beneficial for clarity and compliance.

Cheryl Sullivan, Director, Monroe County Solid Waste Management

- What You Need: We could use a buy-in from commercial partners. Until it becomes an absolute "you must do this", they do not participate. They are a large part of our recycling issue.
- What You Have: We have a resilient community. We have a concerned and participatory Commission. We all make trash, we all make garbage, and we all must work together.
- Thoughts on Education: There is a misconception that recycling all just goes into the trash & not really recycled, so for us it's important to keep pushing the message out to the community. They should also know more about the MRF centers and how they work. In working with waste management, we have arranged different tours, as well as special interest groups, and Commissioners.

What would the panel like to see the Councils & our policy makers do moving forward?

- Plastic Film Recycling additions and a Bottle Bill would be helpful. It would also help to have commercial recycling mandated.
- More collaboration!
- Commercial recycling because we need help. And more regional conversations. Our planning councils are vital to this step!
- A change in the avoided-cost-calculation to allow WTE facilities to make more than 2-3 cents per kilowatt hour since the market rate is currently at 11-12 cents.
- We need to look at PFAS and PFOA and will need some clear direction from Tallahassee as to what it means for the solid waste community.
- We need to look internally at our own practices as well. Point of the day, there is one recycle bin in the room here and it has a plastic bag, which means it was going to be thrown away with the other garbage. We need to start looking at ourselves before we can impose on others. We need to practice what we preach!
- Financing the waste-to-energy facilities better. Funding is important, especially for startup programs. We need to look more at building infrastructure and not just programs.
- We must get the attention of the folks with the money and power to help us with infrastructure. Implementing a Bottle Bill and getting commercial owners on board is also a priority.

Martin County Commissioner Doug Smith encouraged the team to go back amongst themselves and provide the policy makers with a work product that says, *we need this thing out of the legislature this year, it would be a huge game changer for us.*

Summary & Next Steps

The South Florida and Treasure Coast Regional Planning Councils look forward to addressing the following topics and better serving you to help make our Region a better, safer, and cleaner environment to live in:

- Public Education
- Attacking the Construction, Demolition & Vegetation components of the Trash Stream
- Concepts for Regional Cooperation
- Looking at the Transportation Implications
- Hosting a "What Do You Have? What Do You Need?" Conversation to include manufacturers and end-users
- Hosting periodic Solid Waste Management Directors meetings for the Region
- Hosting a Cost Avoidance Conversation
- Covering Legislative Concerns for Solid Waste Management Directors

"One thing I would say about this group, and if you've been in this long enough, the friendships that you build, the relationships you build, the partnerships we build in these two Regional Planning Councils is incredibly powerful. It was said earlier, that if we can get our minds wrapped around an idea and we represent 6 million, 7 million, whatever that population number is and we go to D.C. or we go to Tallahassee, that's an amazing influencer on policy."

~ Doug Smith, Martin County Commissioner

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