Mobile County-wide Recycling Feasibility Study

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1.0 EXECUTIVE SUMMARY

The City of Mobile and Mobile County (County) along with several surrounding communities including the cities of Bayou La Batre, Chickasaw, Creola, Dauphin Island, Saraland, Satsuma, and Semmes (collectively, the Partnership) have expressed strong interest in increasing access to recycling within the Mobile area. The Partnership, led by the City of Mobile, applied for and received a grant from the Alabama Recycling Fund that was able to make this recycling feasibility study possible.

SCS Engineers evaluated the feasibility of several options and alternatives to increase recycling within the Mobile area. For the purposes of this study, options that are referred to as the "Partnership" include all of the participating communities (City of Mobile, Mobile County, Bayou La Batre, Chickasaw, Creola, Dauphin Island, Saraland, Satsuma, and Semmes).

Currently, the City of Mobile's recycling program is a well-organized drop-off operation for city's residents that relies on contracts with a private hauler transporting single-stream materials to the nearest Material Recovery Facility (MRF) owned and operated by Emerald Coast Utilities Authority (ECUA), located in Escambia County, Florida (approximately 50 miles away). Although the ECUA MRF has historically offered relatively low processing fees, the fees have increased significantly recently.

The County's Recycling Center located in west Mobile offers a well-organized source-separated drop-off facility to county residents as well as other communities. The County contracts with Goodwill Gulf Coast (Goodwill) to operate the recycling center which includes baling and shipping preparation as well as the coordination of the sale of recyclable materials. The County's low contamination rates allow the material to be processed (baled) at the recycling center and directly shipped to different material processors. The County has invested capital in the infrastructure and equipment of the recycling center and has established buyers for the commodities that are generated. Similar to other processing facilities throughout the United States, market forces on the commodities, inflation, equipment maintenance, and operations have strained recycling operations financially.

While drop-off recycling facilities have multiple benefits including low contamination rates and community involvement, they typically generate low volumes of recyclable materials. The Partnership commissioned this recycling assessment study to identify alternatives to increase recycling and understand at a high level, the potential cost impacts, while still serving the needs of Mobile residents. For FY 2022, The Partnership's combined recycling was 2,314 tons of materials, which calculates to a recycling rate of less than 1% (2,314 tons of a total 371,000 tons of solid waste reported as landfilled). This represents a significantly lower landfill diversion rate as compared to the Alabama Department of Environmental Management's (ADEM) 25% goal.

This recycling feasibility study was a culmination of the following activities facilitated by SCS Engineers with input from the Partnership including:

- Kick-off Meeting with the Partnership
- Public Outreach and Engagement
- Assessment of Current Conditions (Data Collection and Records Review)
- Solid Waste Generation Estimates
- Recycling Needs Analysis
- Review of State Recycling Legislative Trends
- Review of Regional Recycling Processing Facilities
- Benchmarking with similar communities
- Feasibility Analysis

As part of the Public Outreach and Engagement, town-hall style public meetings were hosted to solicit input from residents' on both the need and important aspects and considerations of increased offerings for recycling. The meetings were hosted at three different locations (Bayou La Batre, West Mobile, and Saraland) to engage residents from different areas within Mobile County. Approximately 70 residents attended the three meetings and comments received were overwhelming in favor of increased access to recycling. The public engagement meeting minutes are provided in **Appendix A**.

Based upon the current conditions, including geography and other factors related to the region, alternatives for expanding recycling within the Mobile area were evaluated and are summarized below:

Option #1A – Transport the City of Mobile's Recyclable Materials from its Drop-Off Facilities to the ECUA MRF and Continue Contracting Goodwill to Operate the County Recycling Center (Status Quo)

The City of Mobile through a bid process opted to have their recyclable materials (approximately 900 tons annually) transported by a private hauler to the ECUA MRF in Cantonment, FL for processing and marketing. Annual costs for this option are $131/ton.

Since November 2014, the County has contracted with Goodwill Gulf Coast (Goodwill) to operate its source-separated recycling facility. The recycling center generates (approximately 1,400 tons annually) revenue from the sale of commodities, but after operations and maintenance expenses, the cost of recycling for the County is approximately $136/ton.

Option #1B – Transport the City of Mobile's Recyclable Materials to the Baldwin County MRF via Bay Minette Transfer Station

With a proposed Baldwin County MRF and Bay Minette Transfer Station both under construction (expected to be commissioned by March 21, 2024), the Partnership will have the option to operate drop-off facilities per status quo and transport its recyclables to one of the facilities located in Baldwin County as an alternative to the ECUA MRF. The cost per ton for the City of Mobile to transport its recyclables to the Baldwin County MRF or the Bay Minette Transfer Station is $101/ton; less than the $136/ton ECUA MRF costs.

It should be noted that the cost of $101/ton was calculated with the assumption that the city will continue with existing transportation modes (and costs) and the processing fee at the Baldwin MRF will be $30/ton or $45/ton if transported to the Bay Minette Transfer Station.

Option #2A – City of Mobile Implements Curbside Collection and Transports its Recyclable Materials to the Baldwin County MRF (Recycling Rate = 10%)

Costs to implement curbside recycling at the City of Mobile level were analyzed by considering an incremental approach for the city's recycling rate, from 10% to 25%. Recycling 10% of the city's waste stream (16,730 tons) equates to a cost of $17/month per household or a cost of $803/ton if sent to the Baldwin County MRF and a cost of $813/month if sent to the Bay Minette Transfer Station. Factors considered for the cost analyses were collection, transfer station operations, transportation, and processing costs.

Option #2B – City of Mobile Implements Curbside Collection and Transports its Recyclable Materials to the Baldwin County MRF via Bay Minette Transfer Station (Recycling Rate = 25%)

Recycling 25% of the waste stream (42,000 tons) equates to a cost of $19/month per household or a cost of $352/ton if sent to the Baldwin County MRF and a cost of $362/ton if sent to the Bay Minette Transfer Station. Factors considered for the cost analyses were collection, transfer station operations, transportation, and processing costs.

At a 25% recycling rate, the capacity at the Baldwin County MRF may not be sufficient. However, costs for the operation of a transfer station were accounted for, providing the city with the option to take the remaining recyclables to the ECUA MRF.

Option #3 – Curbside Collection, develop Transfer Station, and Transport the Partnership's Recyclable Materials (25% recycle rate) to the Baldwin County MRF or Bay Minette Transfer Station

Curbside recycling within the Partnership is the best option for being able to achieve the state's 25% diversion goal and would also necessitate developing a transfer station. For this option, the Partnership's recyclable materials would be transported to the Baldwin County MRF or the Bay Minette Transfer Station. Recycling 92,750 tons annually (25% waste diversion) by sending the recyclable materials to the Baldwin County MRF or Bay Minette Transfer Station equates to a cost of $18 to $19/month per household or $375 to $384/ton.

The capacity at the Baldwin County MRF may not be sufficient to support this option. Limited capacity at the Baldwin County and ECUA MRF may require evaluating other receiving facilities long-term (upon approaching recycling rate goals) or investing in a MRF for Mobile (Option 4).

Option #4 – Curbside Collection including Partnership and Develop a MRF within Mobile County

Similar to Option #3, the Partnership would provide an opportunity for their communities to improve recycling and reach or exceed the state's 25% diversion goal by establishing a MRF within the Mobile area. By increasing tonnage, transportation and processing costs would be minimized. Furthermore, the Partnership would account for needed future capacity. Capital investments needed to construct a MRF vary widely, but would likely range between $10 to $20 million, resulting in a unit cost of $326 to $335 per ton or $16/month per household; making it a more attractive cost option than Option #3. It is likely that the ownership and operations by the Partnership would not be of interest, however, the capital costs needed by a third-party owner-operator would still be factored in to estimate recycling costs.

Option #5 – Expand Drop-Off Opportunities

The Partnership would consider developing additional recycling drop-off facilities at locations convenient to its residents. To increase recycling collections, site location is a key factor including considerations of areas with high population density and accessibility to recycling by rural communities. Costs for this option are similar to the costs provided in Option #1 Status Quo. The County's current annual recycling program costs are $191,471 or $136/ton while City of Mobile's transportation and transportation costs are $119,362 or $131/ton. In addition, the city spends approximately $150,000 annually on operations and maintenance associated with the drop-off locations. The expansion of drop-off locations is a relatively low-cost option to be considered by the Partnership. By monitoring existing locations,

contamination has been minimal, making the recyclables considerably more attractive for the sale of the recovered materials as commodities.

Table 1 presents the annual tons, cost per month per household, and recycling program unit costs ($/ton) for the options described above. The costs presented include collection, transfer station operations, transportation, processing, and/or amortization of capital costs (where applicable).

Table 1. Costs for Recycling Program Options

Option	Annual Tons	Approximate Cost/Month Per Household	Approximate Cost Per Ton
1A. Status Quo (County)[A]	1,402	N/A	$ 136
1A. Status Quo (City of Mobile)[A]	911	N/A	$ 131
1B. Transport to the Baldwin MRF (City of Mobile)[B]	911	N/A	$ 101
1B. Transport to the Bay Minette Transfer Station (City of Mobile)[B]	911	N/A	$ 101
2A. Curbside Collection and Transport Recyclables to the Baldwin MRF at a Recycling Rate of 10% (City of Mobile) [C]	18,425	$ 17	$ 787
2A. Curbside Collection and Transport Recyclables to a new Transfer Station at a Recycling Rate of 10% (City of Mobile)[C]	18,425	$ 17	$ 797
2B. Curbside Collection and Transport Recyclables to the Baldwin MRF at a Recycling Rate of 25% (City of Mobile)[C]	46,000	$ 19	$ 348
2B. Curbside Collection and Transport Recyclables to a new Transfer Station at a Recycling Rate of 25% (City of Mobile)[C]	46,000	$ 19	$ 357
3A. Curbside Collection and Transport Recyclables to the Baldwin MRF at a Recycling Rate of 25% (Partnership)[D]	92,750	$ 18	$ 375
3B. Curbside Collection and Transport Recyclables to a new Transfer Station at a Recycling Rate of 25% (Partnership)[D]	92,750	$ 19	$ 384
4A. Curbside Collection including Development of a $10 Million MRF at a Recycle Rate of 25% (Partnership)[E]	92,750	$ 16	$ 326
4B. Curbside Collection including Development of a $20 Million MRF at a Recycle Rate of 25% (Partnership)[E]	92,750	$ 16	$ 335
5. Expand Drop-off Opportunities	See Status Quo above		

NOTES:

A. The City of Mobile's cost per ton rate includes transportation and processing to the ECUA MRF; the City of Mobile's operations and maintenance costs were not included. The County's costs included subtracting the revenue of material sales over expenditures (operations and maintenance).

B. Option 1B includes the transportation and processing costs to transport the City of Mobile's current recyclable materials to the Baldwin County MRF or Bay Minette Transfer Station.

C. Option 2 includes the collection, transfer station operations, transportation, and processing costs to transport 10% (Option 2A) and 25% (Option 2B) of the City of Mobile's recyclable materials to the Baldwin MRF or Bay Minette Transfer Station.
D. Option 3 includes the collection, transfer station operations, transportation, and processing costs to transport 25% of the Partnership's recyclable materials to the Baldwin MRF or Bay Minette Transfer Station.
E. Option 4 includes the curbside collection and processing costs to develop a MRF within Mobile County.

The costs included in the **Table 1** and through-out this study are based upon approximations and are provided for informational purposes only and are subject to change. These estimates are based on historical data and general market trends. Actual costs can vary significantly based on factors such as location, specific requirements, market fluctuations, and other unforeseen circumstances. It is important to obtain detailed and up-to-date quotes from relevant sources before making financial decisions. The provided approximations should not be considered as a guarantee or commitment of actual expenses. Additionally, SCS have assumed that it will require several years and new infrastructure and/or services to advance from the current recycling rate of 1% to the ADEM established goal of 25%.

Recommendations

It is recommended that the City of Mobile take on a leadership role with the Partnership to advance recycling efforts within the region. The Partnership working together can achieve economies of scale can reduce the cost for managing recyclable materials. Regardless of the option selected, it will require a couple of years and new infrastructure and/or services to advance from the current recycling rate of 1% to the ADEM established goal of 25%.

It is recommended in the short term (i.e., 1 to 2 years) that the Partnership first consider expanding its network of drop-off facilities (Option #5) while continuing to deliver recyclable materials to the ECUA MRF (Option #1A). This approach represents an expansion of the existing system and will allow the Partnership to implement key concepts detailed above, which is anticipated to increase the tonnage of recyclable materials collected. Once the Baldwin County MRF commences operation, and assuming the Partnership can secure an attractive processing agreement with Baldwin County, it is recommended that the Partnership transport recyclable materials (Option #1B) to the Baldwin County MRF as an alternative to the ECUA MRF.

The recyclable quantities currently generated from the Partnership do not warrant large capital investments in infrastructure such as a transfer station or a MRF. The recommendation is to increase recyclable materials quantities to volumes to the level that is economically more attractive for investment in both a transfer station and/or a MRF compared to transporting to MRFs located outside Mobile County. The recycling material quantities needed to achieve economies of scale and attract a private owner-operator to develop a MRF (i.e., a $10 to $20M infrastructure investment) for recycling processing is likely closer to the 10 to 20% Partnership recycling rate, and is highly dependent on future market factors and financial climate. In the near term, the Partnership may consider opportunities to contract with private solid waste haulers that already own and operate transfer stations that may have the capacity and ability to handle recyclable materials for the purposes of more efficiently transporting materials to a nearby MRF.

Implementing curbside residential recycling presents opportunities as well as challenges. Accordingly, an incremental approach is recommended to advance from the status quo to a program that can meet or exceed Alabama's 25% recycling goal. This incremental approach will promote stability in terms of program quality and funding committed, which will inform staff and elected leaders whether to develop a Mobile area MRF or to continue to transfer recyclable materials to an

out-of-County MRF. The challenges of this incremental approach are the lower volumes generated initially that result in a significantly higher cost per ton related to collection and transportation (Option 2A).

The Partnership will need to begin planning now for implementation of curbside collection, set interim recycling targets, solicit collection bids from private hauling companies and pro-actively facilitate education and outreach activities, as well as monitoring progress and performance.

The following are some key concepts to consider that are applicable to and has proven to increase the likelihood of successful recycling services, programs, and facilities:

- Keep It Simple – recycling should be easy for the customer as increasing participation will increase recycling volumes.
- Invest in Education and Outreach – effective communication, in terms of messaging and impact, will help customers understand the recycling program and their role in supporting its success, including the cost impact of contamination.
- Implement an Enterprise Cost Accounting Model – an industry best practice is to align the cost of service with services received where all solid waste management services are managed as a self-sustaining cost center in lieu of embedding waste and recycling services in the ad-valorem tax bill.
- Participate and partner with both governmental and non-governmental groups (programs) such as offered by EPA, ADEM, The Recycling Coalition, and The Recycling Partnership for both funding and education opportunities, as well as current trends, technology improvement, and lessons learned from other communities.
- Include and promote commercial and industrial recycling participation – Businesses and industry participation in "pay as you throw" recycling programs will boost volumes and provide consistent quality of materials as well as minimize transportation impacts. Most businesses are willing to pay for recycling services through subscriptions or licenses.
- Account for all landfill diversion activities – Construction and demolition (C&D) debris from the City of Mobile residents is collected by the city and transported to C&D landfills, which separate some materials such as organics and other materials for recycling that are not currently accounted for and can boost the Partnership's landfill diversion rates. Other programs may exist such as composting and other recycling programs that should be tracked by the Partnership going forward.

2.0 BACKGROUND

The City of Mobile surveyed residents in 2021 to determine their interest and commitment to recycling and noted that 90% of city residents surveyed believe it is somewhat or very important to recycle. As a result, the need to understand options for expanding recycling opportunities as well as the probable costs and logistics were identified. In addition, the Alabama Department of Environmental Management (ADEM) has continued to encourage and support expanded recycling throughout the state. The Solid Wastes and Recyclable Materials Management Act (SWRMMA), Ala. Code § 22-27-1 to 22-27-18 provided ADEM with revenue from solid waste disposal fees to be able to introduce or improve recycling through the Alabama Recycling Fund (ARF). The City of Mobile and Mobile County (County) along with several surrounding (i.e., partnering) communities, listed below, make up the Partnership. The Partnership applied for and received a grant from the Alabama Recycling Fund that was able to make this recycling feasibility study possible.

The partnering communities (Partnership) for the purposes of this recycling feasibility study are listed below:

- Bayou La Batre
- Chickasaw
- Mobile
- Creola
- Dauphin Island
- Saraland
- Satsuma
- Semmes
- Mobile County

Since passage of the SWRMMA, the state-wide landfill diversion goal was set at 25% in the 1991 State Solid Waste Management Plan (SWMP) and ADEM Admin. Code r. 335-13-13-02. In the most recent fiscal year (FY) 2021-2022, the solid waste reduction rate was calculated to exceed the 25% goal.

Until the Partnership committee was formed, Mobile area tracking and reporting of landfill diversion information was limited to separate City of Mobile and Mobile County (County) reporting of recycling to ADEM within Solid Waste Management Plans, which are submitted to ADEM in accordance with the regulatory requirement of once every 10 years. The formation of the Partnership was intended to provide an opportunity for communities to work together within the Mobile area to identify a collective approach to improve recycling while taking advantage of aggregating volumes to increase recycling (i.e., economies of scale) and ideally minimize costs for handling and processing of recyclable materials while setting the strategic trajectory to meet or exceed the State's recycling goal.

3.0 CURRENT CONDITIONS (RECYCLING AND SOLID WASTE PROGRAMS)

For the purposes of this study, options that are referred to as the "Partnership" include all of the participating communities (City of Mobile, Mobile County, Bayou La Batre, Chickasaw, Creola, Dauphin Island, Saraland, Satsuma, and Semmes).

The City of Mobile owns and operates its own solid waste collection system for curbside residential municipal solid waste (MSW) within city limits and transports MSW to the nearby Chastang Landfill for disposal. Recyclable materials are received from City of Mobile residents at two single-stream drop-off facilities, compacted, and transported to the Emerald Coast Utilities Authority (ECUA) Materials Recovery Facility (MRF) located in Escambia County, Florida, approximately 50 miles from Mobile.

Mobile County (unincorporated area) owns a source-separated recycling center located in west Mobile. The facility was constructed by the County and has been operated by Goodwill Gulf Coast since November 2014. The facility offers recycling services through its recycling center, which accepts materials from residents county-wide. Residents must clean and separate recyclables at the County's recycling center. Other recycling services within the study area are offered through voluntary subscriptions with private haulers. The sections below provide an in-depth overview of the individual Partnership members solid waste and recycling programs.

3.1 CONTRACTUAL SOLID WASTE COLLECTION AGREEMENTS

City of Mobile

Residential Municipal Solid Waste Collection – The City of Mobile, through its Public Works Department performs curbside residential MSW collection within city limits to its approximately 65,000 households. It should be noted that there is no direct fee to the residents for this service as it is included in the ad-valorem taxes. MSW is collected once per week via city-owned trucks. As stated above, the city transports all residential MSW to the Chastang Landfill, which is located in the County and is owned by the Solid Waste Disposal Authority (SWDA) and operated by Waste Management, Inc. The city does not currently own or operate solid waste transfer stations.

Commercial Municipal Solid Waste Collection – Commercial solid waste collection is provided to businesses through open market subscriptions with each of the privately-owned waste haulers located within the area.

Municipal Solid Waste Disposal - The SWDA provides oversight for the long-term disposal of the MSW generated by the city at the Chastang Landfill. The SWDA was established by the City of Mobile by Resolution 60-194, 5/7/85. Title 11, Chapter 89A, Code of Alabama 1975; Resolution 60-667, 11/19/91; Resolution 03-166, 03/22/94.

The SWDA does not manage the city's programs for recyclables, mixed organics, food scraps and/or Construction & Demolition (C&D) wastes. At the present time, these actions and functions are the responsibility of the city, rather than SWDA. C&D materials are typically transported to Dirt, Inc (C&D Landfill).

Mobile County and Partnering Cities

Residential Municipal Solid Waste Collection - According to Mobile County's 2015 Solid Waste Management Plan (SWMP), MSW collection is regulated through the Mobile County Health Department. Mobile County Health Department regulates and maintains a list of approved solid waste haulers through permits and MSW collection is offered to residents through paid private subscriptions directly with the waste haulers. The SWMP also indicates that there are approximately 33 registered companies that provide collection services within the County.

Commercial Municipal Solid Waste Collection – Commercial solid waste collection is provided to businesses through open market subscriptions with each of the privately-owned waste haulers located within the area.

Municipal Solid Waste Disposal - In 1980, Mobile County Commission established the Mobile County Solid Waste Disposal Authority (MCSWDA). The MCSWDA consists of three unpaid individuals from the community and the Board of Directors, whom meet regularly to manage all solid waste disposal and landfill planning functions of the County Commission. There are at least three MSW landfills located within the Mobile area that haulers transport solid waste to for disposal, including the Chastang Landfill, GFL's Turkey Trot Landfill, and Lott Road Landfill. Other disposal options include transporting MSW Timberlands Landfill in Brewton, AL. At least two private waste haulers maintain transfer stations within the Mobile area; however, no municipally owned transfer stations are located in the immediate Mobile area. Yard trash and construction debris collected in Mobile is primarily disposed of at Dirt, Inc, a Construction and Demolition (C&D) Landfill.

3.2 RECYCLING CENTERS

Overview

City of Mobile

The City of Mobile operates two single-stream drop-off recycling facilities which are available to city residents only. Recyclable materials from businesses and residents outside of city limits are not accepted. Pertinent information for the two recycling facilities is presented in **Table 2**. At each facility, residents place all recyclable materials into a 40-yard compactor receiver. Each recycling facility is monitored by city staff members, which helps minimize contamination (i.e., non-recyclable materials). Materials received at the recycling facilities are transported by a private hauler to ECUA's Materials Recovery Facility (MRF), located at 13009 Beulah Road, Cantonment, Florida (approximately 50 miles from Mobile). When the ECUA MRF is unavailable, recyclable materials are transported to a Republic MRF, located at 804 L and A Road, Metairie, Louisiana (approximately 145 miles from Mobile).

Table 2. City of Mobile Recycling Drop-off Facilities

Facility	Address	Hours of Operation
Western Admin Complex (WAC)	4851 Museum Drive	Mon-Fri: 7am-5pm Sat-Sun: 7am-4pm
Pinehill	308 Pinehill Drive	

Mobile County

The County (unincorporated area) owns a source-separated recycling center located in west Mobile, which accepts recyclable materials from residents across Mobile County. The facility was constructed

by the County and has been operated by Goodwill Gulf Coast (Goodwill) since November 2014. Goodwill staffs the facility to process materials (bale, store, and ship) and also relies on outside groups such as United Way to supply volunteers to help enforce recyclable material preparation guidelines. In FY 2021, 134 volunteers helped manage the facility. The number of volunteers decreased to 78 in 2022. Information for the County recycling center is presented in **Table 3**. The recycling center is equipped with multiple receptacles for the placement of recyclable materials including hoppers, cubic yard cardboard boxes on pallets, and stackable portable containers. Residents, upon arrival in their personal vehicle, are required to separate the recyclable materials by material type into the labeled receptacles. The source-separated recyclable materials are then processed (baled) at the recycling center, sold, and shipped to different material processors or manufacturers. The range of materials accepted may vary as they are largely dictated by market demand and the availability of funding for various other County programs.

Table 3. Mobile County Recycling Center

Facility	Address	Hours of Operation
Mobile County Recycling Center	7450 Hitt Road	Mon-Sat: 7am-5:30 pm Sun: 10am-5:30pm

Other Partnering Cities

Also, within the other municipalities within the Partnership, Satsuma offers a single-stream drop-off container for its residents and Saraland offers two drop-off containers through WastePro; no other municipalities in the Partnership offer drop-off recycling services. Curbside recycling services are mainly offered through voluntary subscriptions and residents may also drop off their recyclables at the County's recycling center.

Recycling Center Utilization

Residential utilization of the City of Mobile and Mobile County recycling facilities varies between locations. In 2021, the city reports that annual usage ranged from about 165 vehicle trips at the WAC facility to 211 trips at the Pinehill facility. Not surprisingly, the convenience center located closer to the City of Mobile's urban area received the most vehicle trips, although only slightly. The County reported about 413 daily average trips at its recycling center. From 2021 to 2022, annual vehicle trips for the City of Mobile facilities indicated an 8.5% increase, while the County's recycling center indicated a 4.2% decrease and a daily average vehicle increase to 422 vehicles. **Exhibit 1** provides of map of Mobile County with designated markers to indicate the location of the recycling centers. The facility with lower daily usage (WAC) is located in a less densely populated area off of the typical driving route.

Overall, the number of vehicle trips to the recycling centers increased at the City of Mobile and decreased at the County from 2021 to 2022. **Table 4** lists the annual vehicle trips for each recycling center and calculates how usage of the individual sites has changed over the last year.

Exhibit 1. Residential Recycling (Drop-Off) Facilities within Mobile County

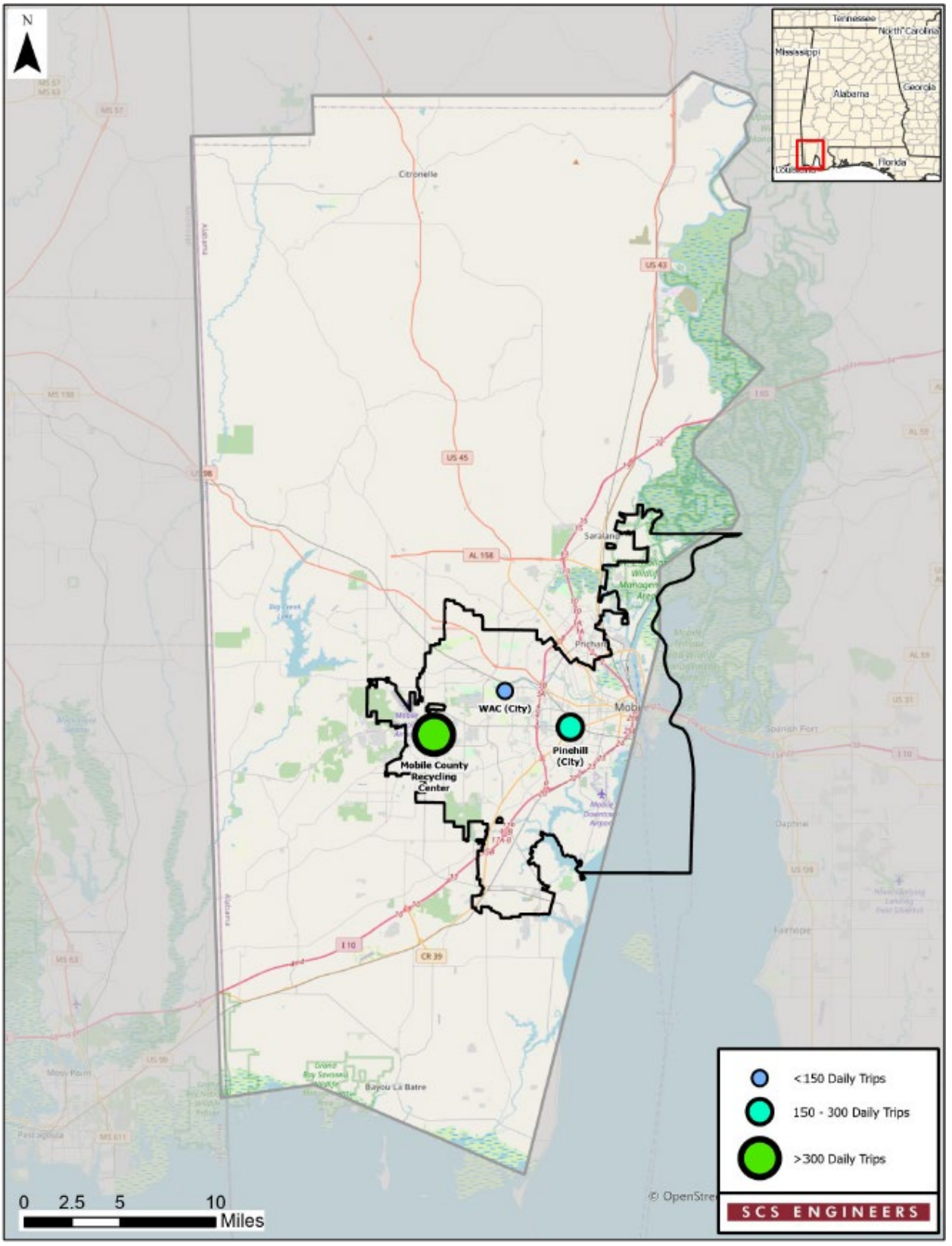


Table 4. Annual Vehicle Trips by Recycling Location

Facility	FY 2021 Vehicle Trips	FY 2022 Vehicle Trips	Vehicle Trips (% Change)
Pinehill (City of Mobile)	54,956	60,941	10.89%
WAC (City of Mobile)	42,782	45,123	5.47%
Total (City of Mobile)	**97,738**	**106,064**	**8.52%**
Mobile County	**138,511**	**132,674**	**-4.21%**

Recyclable Material Types and Quantities

As stated in Section 3.2, the City of Mobile operates two single-stream drop-off recycling facilities while the County owns one source-separated recycling center, operated by Goodwill Gulf Coast. The range of recyclables accepted at the County is largely influenced by market demand while recyclables accepted at the city's facilities are dictated by ECUA's MRF. Recyclable materials typically accepted by the County and City of Mobile are presented in Table 5. As shown in the table, the range of materials accepted are similar except that the County accepts plastic bags and the City of Mobile accepts a larger assortment of metals.

Table 5. Recyclable Materials Accepted

Facility	Recyclable Materials Accepted								
	Paper	Corrugated Containers	Plastics #1-7	Mixed Rigid Plastics	Plastic Bags	Glass Bottles/ Jars	Aluminum Cans	Steel Cans	Other Metals
Mobile County	•	•	•	•	•	•	•	•	
City of Mobile	•	•	•	•		•	•	•	***

*** Other metals accepted include tin cans, metal pots, pans, and cookie sheets without plastic liners.

City of Mobile

In 2021, the City of Mobile recycled a total of 859 tons of materials and in 2022, 911 tons were recycled. A comparison in Table 6 indicates an overall increased recycling rate of 6% from 2021 to 2022; participation also increased by about 9% in 2022. It should be noted that recyclable materials were not collected during portions of FY 2021 due to a fire at the ECUA MRF, but the City of Mobile utilized its back-up plan and delivered its recyclable materials to the Republic Services facility in Baton Rouge, Louisiana.

Mobile County

In 2021, the County recycled 1,488 tons of recyclable materials and 1,402 tons were recycled in 2022, indicating a decreased recycling rate of approximately 6%. During this time period, participation also decreased by approximately 4%. The County's annual recycled tons are presented in Table 6.

Table 6. County and City of Mobile-Designated Recycling Drop-off Facilities Annual Tons

Facility	FY 2021 Annual Tons	FY 2022 Annual Tons	Annual Tons (% Change)
Mobile County (Total)	1,488	1,402	-5.95%
Pinehill (City of Mobile)	518	378	-31.25%
WAC (City of Mobile)	341	533	43.94%
City of Mobile (Total)	**859**	**911**	**5.88%**
City of Mobile and County (Total)		**2,313**	

The City of Mobile and County's combined tonnage for FY 2022 results in 2,315 tons of materials recycled, which calculates to a recycling rate of less than 1% (2,313 of 371,000 tons).

SCS reviewed the County's records related to recyclable material types collected through the recycling center. **Exhibit 2** presents the materials by commodity and amount for FY 2021 and 2022. Mixed paper, cardboard, and glass comprise the largest portion of the recyclable material stream. These materials comprise approximately 76 percent of the collected materials by weight. It is unclear what factors contributed to the decrease in recyclables between FY2021 and FY 2022 as a detailed progress report was not provided for FY 2022.

Exhibit 2. County Recyclable Materials by Commodity at the Goodwill Facility

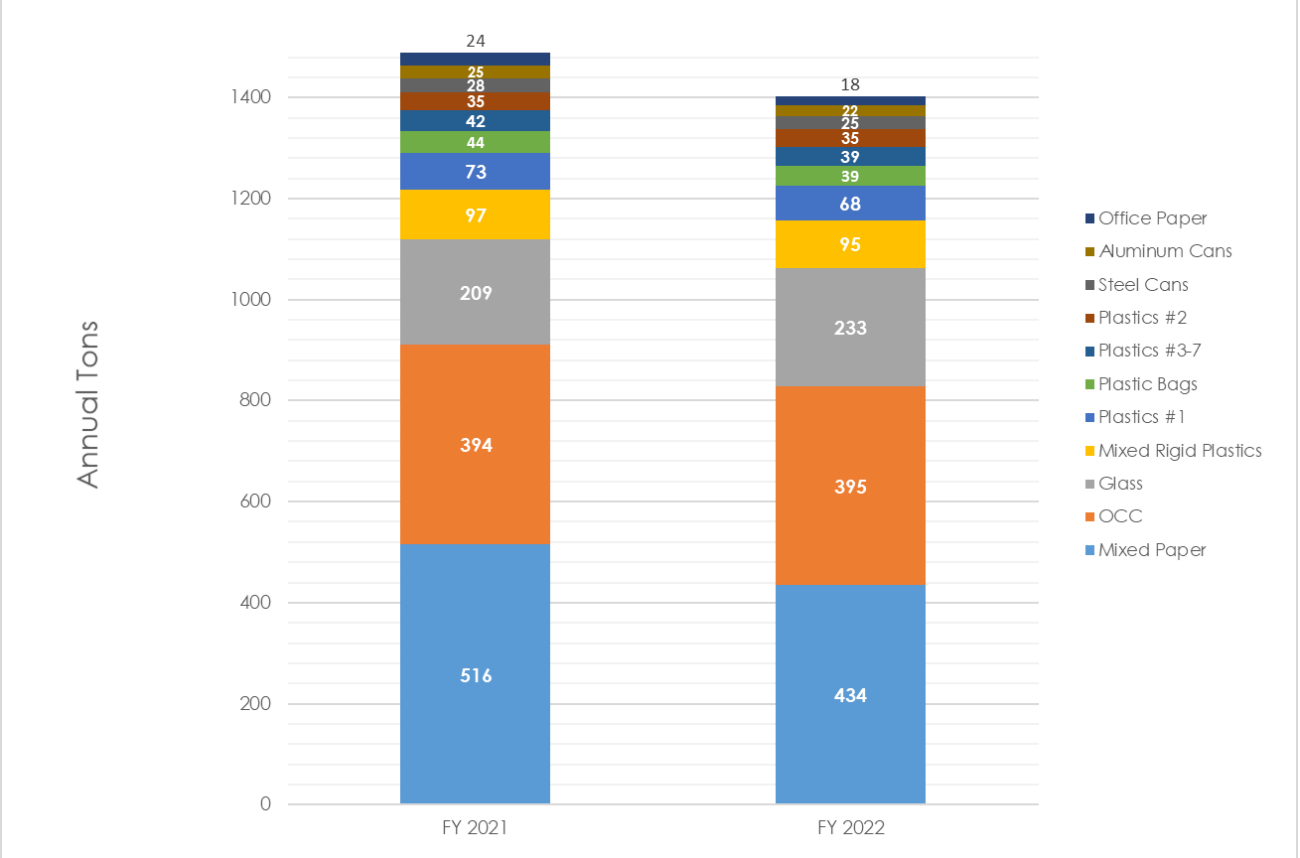


Table 7 below represents the amount of recyclable materials collected by commodity and revenue per ton for FY 2022 at the County's recycling center. A total of $213,888 was collected from the sale of recyclable materials, with aluminum displaying the highest rate per ton but very low volume. The most revenue generated was from cardboard based on the large quantities collected and median rate of $152/ton. The market for cardboard tends to fluctuate and had decreased significantly at the time of this study. SCS reviewed the most recent quarterly report for 2023, which compares progress made to the 2nd quarter of 2022. Insights regarding volume, revenue, and equipment include the following:

- Volume was approximately 16% lower than in the 2nd quarter of 2022 and 15% lower than the previous quarter (1st quarter of 2023). This was largely due to low volumes of mixed rigid plastic and office paper. Mixed rigid plastic was reportedly lower due to issues with the warehouse truck, which supplies the facility with that material and office paper was lower due to issues with the shredder. The only material category that indicated an increase in volume compared to the previous year were plastics #3-7; this increase is in line with the upward swing in the production of plastic packaging.

- Revenue was about $22,000 in the 2nd quarter of 2023, down 70% from the same quarter in 2022. Lower material rates contributed to the decrease in addition to the lower volume. Material rates reached record highs in 2022, followed by a steady decrease in 2023. Below is a summary of rate trends:
    - Cardboard and mixed paper suffered from an over-supply, limiting both shipments and lowering prices. Baler outages in December and February further limited the amount that could be processed.
    - Rates for plastic have also decreased from 2022 levels and there wasn't much material to ship out in the 2nd quarter of 2023.
    - Aluminum rates have remained fairly stable at $1,660/ton; however, the County didn't accumulate enough material for shipment during the 2nd quarter. It should be noted that Novelis is developing an aluminum mill in Alabama which may enable the Partnership to gain the benefit of reduced transportation costs.
- Material Processing equipment failures contributed to inefficiencies in recycling. The sorting table was damaged by a lightning strike on March 28th and was repaired by April 15th. The horizontal baler was down for a period of time due to a damaged contactor switch.

Table 7. Revenue from County Recyclable Materials Collected

Mobile County	FY 2022 Recycling Materials Accepted												
	Mixed Paper	Old Corrugated Containers	Glass	Mixed Rigid Plastics	Plastics #1	Plastic Bags	Plastics #3-7	Plastics #2	Steel Cans	Aluminum Cans	Office Paper (Shredding)	Other	Total
Tons	434	395	233	95	68	38	39	35	25	22	18	--	1402
Tons (%)	31%	28%	17%	7%	5%	3%	3%	3%	2%	2%	1%	--	100%
Revenue	$42,618	$59,994	$6,277	$5,198	$34,757	$2,580	$0	$10,980	$5,796	$40,097	$820	$4,771	$213,888
Revenue/ Ton	$98	$152	$27	$55	$511	$66	$0	$310	$231	$1,817	$46.04	--	--

1) Tonnage was rounded.

Residuals

A successful element of the County and City of Mobile's recycling programs are the low percentages of residuals (also known as contamination) in the loads of recyclable materials transported for processing. Goodwill staff at the County's recycling center and City staff monitor residents' usage at their centers to facilitate proper recycling and correct behavior when necessary. Additionally, educational material on the proper way to recycle is provided to Mobile residents through the City and County's websites and social media. This level of attention and scrutiny brought to the programs has resulted in a clean stream of materials destined to market.

Through the City of Mobile's current contract with ECUA, recyclable materials collected at the two single-stream drop off facilities are delivered to the ECUA MRF. ECUA currently accepts, processes, and markets the recyclables at a flat rate pricing structure for recyclables based on contamination rates, as presented in **Table 8**. Under the contract, ECUA has the right to reject loads containing excess rejects, defined as "materials collected along with the recyclable materials that are not designated by ECUA to be accepted at the MRF for processing". To date, the city's drop-off locations combined contamination rate has been "best in class"(less than 15 percent) and no deliveries of recyclable materials have been reportedly rejected by ECUA. Until FY 2024, the City of Mobile has consistently paid $15 or less for each ton of recyclable materials.

Table 8. Contamination Rate vs Cost Per Ton

Contamination Rate	Cost per Ton
Less than 15%	$15
35%	$25
Greater than 35%	$35

With a proposed change of the ECUA Agreement for FY 2024, the City of Mobile anticipates a significant increase in costs to $60/ton for recyclables and $65/ton for recyclables containing rejects in excess of 25%; effective October 1, 2023 to September 30, 2024 (See Section 3.4).

3.3 PARTNERSHIP MANAGED RECYCLING QUANTITIES

Recyclable material quantities have been projected for the next twenty years by using the annual County population growth rate factor established from population historical information as well as growth projections obtained from the U.S. Census and the University of Alabama Center for Business and Economic Research, respectively. **Table 9** below includes population information that was evaluated to establish growth factors.

Table 9. Historical and Projected Population Growth Projections

Year	City of Mobile		Partnership	
	Population	Growth Rate [1]	Population	Growth Rate [1]
2010	195,111	--	412,992	--
2020	187,041	-4.1%	414,809	0.93%
2025[2]	207,786	0.93%	418,679	0.93%
2030	209,697	0.92%	422,549	0.92%
2035	211,627	0.92%	426,419	0.92%
2040	213,552	0.91%	430,289	0.91%

Notes:
1) The growth rate from 2010 to 2020 is based on a 10-year interval; 5-year intervals are shown from 2020 to 2040.
2) The City of Mobile population increased in 2023 by approximately 19,000 residents as a result of annexation. The total population growth of the Partnership is not affected since the annexed area is included within the County's population.

From 2020 to 2040, the Partnership's population is projected to grow by approximately 15,500. The population is one of several important considerations as economies of scale is an important factor in terms of the cost associated with recyclable materials management.

SCS reviewed recyclable material quantities and other information collected by the Partnership. Table 10 presents the quantities of materials collected in 2022. The growth rate factor is expected to remain relatively stable at 0.2% annual growth rate or approximately 0.9% growth rate every five years. Through continued use of the recycling drop-off centers alone, the Partnership is expected to generate an additional 22 tons of recyclables every 5 years or 44 tons of recyclables every ten years.

Table 10. Current and Projected Recycling Quantities

Year	City of Mobile Recycling Quantities	Mobile County Recycling Quantities	Population Growth Rate
2022	911	1,403	--
2025	919	1,416	0.93
2030	928	1,429	0.92
2035	936	1,442	0.92
2040	945	1,455	0.91

Since passage of the Solid Wastes and Recyclable Materials Management Act (SWRMMA), the state-wide landfill diversion goal has been set at 25%. The current recycling rate of the Partnership is calculated to be less than 1% (2,314 of 371,000 tons). In order for the Partnership to meet the state's recycling goal, an additional 24% of waste generated or a total of approximately 92,750 tons of waste would have to be diverted from landfills.

3.4 CONTRACTS AND COSTS

In June 2020, the City of Mobile issued an invitation to bid for recycling equipment rental, hauling rental equipment, and the transport of single-stream recycling receiver bins from Mobile, AL to Cantonment, FL. The contract was awarded to Republic Services in July 2020. The single-stream recyclable materials would be sent to the ECUA MRF since the ECUA board approved an interlocal Agreement with an effective date of October 1, 2021 to September 30, 2022. The first amendment to this Agreement extended the date of services to September 30, 2023. The most recent proposed change to the ECUA Agreement significantly increases the processing fee from $15/ton to $60/ton and has an effective date of October 1, 2023 to September 30, 2024. In case the ECUA facility is closed, the materials are transported to the Republic Services MRF as a backup at a cost of $335/ton to process and haul. An overview of the City of Mobile's recycling contracts is provided below.

- July 31, 2020 - Recycling Equipment Rental and Hauling Services Agreement: The City of Mobile executed a three-year contract with Republic Services for the rental of recycling equipment (i.e., receiving bins), equipment maintenance, and on-call hauling services to the ECUA MRF. The City of Mobile would be billed on a monthly basis for all services provided in the preceding months.

The rate per haul and transport of recyclables to the Republic Services MRF was $316 per trip (haul) and the total amount billed was not to exceed $100,000 per year. The City of Mobile's prior three-year contract for the same services expired in July 2020. The rate per haul cost of $316 did not include the processing fee for the recyclable materials.

- **September 28, 2021 – ECUA Processing Services:** ECUA staff used data from a composition study to develop a flat rate pricing structure in which a jurisdiction whose recyclables contain less than 15% contamination pay $15/ton, 35% contamination pay $25/ton, and over 35% pay $35/ton for processing. In September 2022, the City of Mobile approved the first amendment to the interlocal Agreement with an effective date of October 1, 2022 through September 30, 2023, with the same terms and conditions as the original Agreement.

  During FY 2022, the City of Mobile delivered an average of 80 tons of recyclable materials per month, which cost approximately $15,000 per year.

- **July 19, 2022 – Addendum to the Agreement between the City of Mobile and Republic Services**: Because the ECUA MRF had occasionally and with little notice closed its facility, the City of Mobile required additional services to haul the materials to an alternate location to provide continuous service to city residents. Republic Services was uniquely situated and licensed to transport the materials to its own MRF located in Baton Rouge, Louisiana. The rate per haul and transport and processing to the Republic Services MRF was not to exceed $275/ton.

- **May 12, 2023 – Addendum No. 2 to the Agreement between the City of Mobile and Republic Services:** The purpose of this Addendum was to extend bin rental and transportation for the public recycling facilities to December 31, 2024, amend pick-up requirements, and increase the price to haul to the Republic MRF in Baton Rouge during the closure of ECUA. The rate for processing and hauling to the Republic Services MRF increased from $275/ton and was not to exceed $335/ton. The total amount billed was not to exceed $200,000 per year. For such a short service interval, it was impractical for the City of Mobile to do a new bid selection and for a new contractor to capitalize the necessary equipment and provide services. By January 2025, the City of Mobile expects to have another option for the receipt of recyclables that would significantly change the rental and transportation services in the current contract.

- **August 9, 2023 – ECUA Interlocal Agreement for Acceptance and Processing of Single Stream Recyclables:** The City of Mobile was asked to review the proposed FY 2024 Agreement and return it to ECUA by early September for it to go into effect from October 1, 2023 to September 30, 2024. Significant changes to the previous Agreement include a revised charge for recyclables to $60/ton from $15/ton and revised charges for the rejection of loads. In the event that recyclables contain rejects (materials collected that are not designated by ECUA to be accepted at the MRF) in excess of 25%, the entire load may be rejected and the City of Mobile will be assessed $65/ton of rejected materials per load. Additionally, the City of Mobile will be liable for all disposal costs in case the loads cannot be disposed of at Escambia County's Perdido Landfill. In the event that the City of Mobile has three loads rejected within a 30-day period, the Agreement may be terminated. Other terms of the Agreement include:

  - The City of Mobile will deliver all recyclables collected through its curbside recycling program, with the exception of recyclables received at the City of Mobile's commercial drop off sites;
  - The City of Mobile is limited to delivering 3,000 tons of recyclables per calendar year, absent subsequent written Agreement between the parties;
  - ECUA has the right to refuse recyclables in the event the MRF is shut down and both parties have the right to terminate the Agreement for convenience.

Mobile County entered into a lease agreement with Goodwill in October 2014 for use of a property, located at 7450 Hitt Road, as a recycling center for public benefit. Under this agreement, Goodwill was held responsible for the operation of the program and sale of recyclable materials. Addendums to the Agreement made provisions for additional funding on behalf of the County. A summary of each contract is provided below.

- October 13, 2014 – Goodwill Industries Easter Seals of the Gulf Coast, Inc. Lease Agreement: The County (lessor) entered into a lease agreement with Goodwill (lessee) for the site located at 7450 Hitt Road to be used as a recycling center, with a cost of $1/year to be paid by the lessee. The term of the lease began on the date of issuance of the certificate of occupancy and extends for a period of 25 years with an opportunity to automatically renew for an additional 25 years upon the expiration date. Under this agreement, the following conditions were agreed to:
    - The lessee operates the program and facilities, and handles and coordinates the sale of recyclable materials. It is also the responsibility of the lessee to maintain the facility, cover all costs for maintenance, and provide employment for all personnel, none of which can be County employees.
    - The lessee shall remain compliant with all requirements set forth by the various grants received for the project including but not limited to the Coastal Impact Assistance Program (CIAP) and Alabama Department of Environmental Management (ADEM) grant. Among these requirements are audit and reporting standards.
    - The lessee agreed that all program income will be reinvested back into the project and the recycling center will not be used to make a profit for the lessee or its directors.

- August 11, 2017 – Addendum to the Lease Agreement: Because it was recognized that the income was insufficient to fund the recycling operation due to the market decline for recycled materials, the lease agreement was amended to make a provision for additional funding. New conditions included:
    - The lessee would submit an accounting of all income and expenses occurred.
    - The lessor would reimburse the lessee for any losses; however, the lessor's obligation of reimbursement could not exceed $150,000 per FY, and no carryover of unused reimbursement from year to year would be accepted.
    - In addition to the reimbursement, the lessor would reimburse the lessee the costs of repairing and maintenance of all capital equipment utilized in the recycling center. Capital equipment includes: horizontal baler and conveyor, vertical baler, sorting platform and conveyor, tipper for sorting conveyor, glass breakers and crusher, can densifier, forklifts, and skid steer loader.
- September 30, 2020 – Sub-Recipient Agreement for the Operation of the Mobile County Recycle Center: Because the County recognized that the recycling program income was insufficient to fund its operations, this Agreement made provisions to the Gulf of Mexico Energy Security Act (GOMESA) funding to support continued operations of the recycling program. Under this Agreement, the County agreed to offset documented losses incurred that exceeded $150,000 per FY for an amount not to exceed $450,000. The Agreement's effective date was from October 1, 2020 to September 30, 2023.

Currently, there are no curbside recycling franchise agreements with third-party recycling haulers within the Partnership.

Transportation and Processing Fees at the nearest Processing Facility

Transporting recyclable materials is typically costly (low weight density) and therefore transportation costs should be carefully considered. The nearest recycling processing facility (ECUA MRF) is approximately 50 miles away but is still considered the closest processing location and best current option for the City of Mobile. Table 11 presents the annual transportation costs associated with hauling recyclable commodities to the closest MRF. The processing fee at the ECUA MRF is currently $15 per ton (dependent on contamination rates). Minimizing transportation by sending the City of Mobile 's single-stream recyclables to ECUA results in about $64,000 in transportation costs and $14,000 in annual processing fees. Additionally, the monthly rental fee of each 40-yard compactor receiver is $72.50; resulting in a total annual cost of approximately $78,000 to send recyclable materials to the ECUA MRF.

Table 11. Annual Transportation Costs and Processing Fees at the nearest Processing Facility

Transportation to ECUA					
Commodity	**Destination**	**Container Size**	**Annual Hauls**	**Cost Per Haul**	**Annual Cost**
Single-Stream Recyclables	ECUA MRF	40-yd compactor (10-ton capacity)	202	$ 316	$ 63,832
Processing Fees at ECUA					
Commodity	**Destination**	**Container Size**	**Annual Tons**	**Processing Fee ($/Ton)**	**Annual Cost**
Single-Stream Recyclables	ECUA MRF	40-yd compactor (10-ton capacity)	911	$ 15	$ 13,665
Item			**Amount**	**Cost**	**Annual Cost**
Monthly Rental of each 40-yard compactor receiver			12	$ 73	$ 870
Total					**$ 78,367**

As previously mentioned, ECUA has recently increased its processing fee to $60/ton, beginning in October 1, 2023. The annual cost of this increase is presented in Table 12. Transportation costs will likely remain the same but increase the annual processing fees to $54,660. Per the contract, the monthly rental fee of each 40-yard compactor receiver is $72.50; resulting in a total annual cost of approximately $119,362 to send recyclable materials to the ECUA MRF.

Table 12. FY 2024 Annual Transportation Costs and Processing Fees at the nearest Processing Facility

Transportation to ECUA					
Commodity	**Destination**	**Container Size**	**Annual Hauls**	**Cost Per Haul**	**Annual Cost**
Single-Stream Recyclables	ECUA MRF	40-yd compactor (10-ton capacity)	202	$ 316	$ 63,832
Processing Fees at ECUA					
Commodity	**Destination**	**Container Size**	**Annual Tons**	**Processing Fee ($/Ton)**	**Annual Cost**
Single-Stream Recyclables	ECUA MRF	40-yd compactor (10-ton capacity)	911	$ 60	$ 54,660
Item			**Amount**	**Cost**	**Annual Cost**
Monthly Rental of each 40-yard compactor receiver			12	$ 73	$ 870
Total					**$ 119,362**

Mobile County, on the other hand, has designated Goodwill responsible for the operation of its recycling program and sale of commodities. Revenue from the sale of commodities is reinvested back into the program to cover all expenditures including operations and maintenance costs. Excess of expenditure costs are offset by the County in the form of grants.

Total Costs

City of Mobile Costs

Annual processing fees and associated transportation of approximately 911 tons of material collected from the City of Mobile's drop-off facilities will increase to $119,362. As presented in **Table 13**, the City of Mobile avoids approximately $187,000 or $205/ton annually by sending all recyclable materials to the ECUA MRF for processing and marketing compared to the next closest option, Republic Services MRF in Baton Rouge, LA. The City of Mobile only sends recyclables to the Republic Services MRF when ECUA is shut down as a back-up plan. The City of Mobile's current management of drop-off facilities represents the most cost effective approach while considering additional offering of curbside collection. City of Mobile residents have come to expect recycling, and continuance of drop-off facilities keep residents in the habit of recycling.

Table 13. Annual Costs to the Closest and Alternate Facilities

Destination	Equipment Rental	Transportation	Processing Fees	Total Cost
Nearest Facility (ECUA MRF)	$ 870	$ 63,832	$ 54,660	$ 119,362 [A]
Cost Per Ton			$/ton	$ 131

[A] Operations and maintenance costs were not considered for the City of Mobile's cost analysis.

County Costs

The County contracts with Goodwill to operate the program and facilities, and coordinate the sale of recyclable materials. Table 14 presents the annual recycling costs for the County.

Table 14. The County's Current Annual Recycling Program Costs

County Recycling Center Costs		
Revenue	$	213,928
Expenses	$	405,398
Net Revenue	$	(191,471)
Tonnage	$	1,404
Processing Cost Per Ton	**$**	**136**

4.0 OPPORTUNITY TO INCREASE RECYCLING

Recycling rate improvement depends on diverting certain material types from the landfill for beneficial use or re-use. As shown in **Table 15**, the composition of the City of Mobile's and the Partnership's landfilled waste was estimated from a waste characterization study recently completed in 2023 for the City of Huntsville, AL.

Table 15. City of Mobile's Potential Recycling Quantities

Material Type		City of Mobile				Partnership			
		Annual Tons (2020)		Proportion		Annual Tons (2020)		Proportion	
		184,252				370,943			
Paper	Corrugated Containers/Boxes	18,978	55,828	10.3%	30.3%	38,203	112,392	10.3%	30.3%
	Newsprint/Magazines/Catalogs	2,580		1.4%		5,193		1.4%	
	Mixed Paper	14,372		7.8%		28,934		7.8%	
	Sorted Office Paper	2,948		1.6%		5,935		1.6%	
	Compostable Paper	-		0.0%		-		0.0%	
	Other Paper (Non-Recyclable)	16,951		9.2%		34,127		9.2%	
Plastic	Plastics #1 - #7	11,976	37,772	6.5%	20.5%	24,111	76,043	6.5%	20.5%
	Expanded Polystyrene	-		0.0%		-		0.0%	
	All Films and Bags	19,899		10.8%		40,062		10.8%	
	Plastic, Compostable	-		0.0%		-		0.0%	
	Other Plastic (Non-Recyclable)	5,896		3.2%		11,870		3.2%	
Glass	Glass Bottles and Jars	4,791	4,791	2.6%	2.6%	9,645	9,682	2.6%	2.6%
	Other Glass (Non-Recyclable)	-		0.0%		37		0.0%	
Organics	Food Waste	35,929	56,750	19.5%	30.8%	72,334	114,250	19.5%	30.8%
	Wood Clean	2,948		1.6%		5,935		1.6%	
	Yard Debris	4,975		2.7%		10,015		2.7%	
	Textiles/Carpet	10,134		5.5%		20,402		5.5%	
	Other Organics	2,764		1.5%		5,564		1.5%	
Metals	Ferrous/Steel Containers	4,975	7,370	2.7%	4.0%	10,015	14,838	2.7%	4.0%
	Other Ferrous Metals	921		0.5%		1,855		0.5%	
	Aluminum Cans	1,474		0.8%		2,968		0.8%	
	Other Aluminum	-		0.0%		-		0.0%	
C&D	Construction and Demolition	-	-	0.0%	0.0%	-	-	0.0%	0.0%
HW	Paint, Batteries, and Pesticides	-	-	0.0%	0.0%	-	-	0.0%	0.0%
Other	Electronics, Bulky Items, etc.	21,742	21,742	11.8%	11.8%	43,738	43,738	11.8%	11.8%
Total		**184,252**	**84,252**	**100%**	**100%**	**370,943**	**70,943**	**100%**	**100%**

1) The Partnership generated approximately 371,000 tons of solid waste in 2020.

The table provides a breakdown of the potential recycling quantities and identifies opportunities to focus on higher-value commodities such as corrugated paper and plastic containers that can offset costs of recyclable material processing; as well as organic diversion to extend the life of the landfill. Specifically, waste diversion opportunities are evident for:

- **Recyclable Paper** – Approximately 30% of disposed waste is paper, of which 21% is recyclable (e.g., newspaper, corrugated cardboard, office paper). This material accounts for 11,700 tons for the City of Mobile and 23,600 tons for the Partnership annually.
- **Plastic Bottles and Containers** – About 6.5% of landfilled waste are plastics #1 - #7; approximately 11,900 tons for the City of Mobile and 24,100 tons for the Partnership annually are divertible.
- **Food** – Approximately 20% of landfilled waste is food, which accounts for 74,000 tons annually from the Partnership.

Options to expand recycling in the Mobile area and achieve the 25% state-wide diversion goal are discussed in Section 6.

4.1 REGIONAL COOPERATION

As outlined in ADEM's Solid Waste Biennial Report, priority for funding will be placed on grantees which act in partnership. Examples of communities that have acted in partnership are presented below.

- The City of Mobile received a $240,000 grant from ADEM to establish a third recycling center drop-off center and promote public education. An additional $100,000 was awarded to examine the feasibility of additional recycling services across Mobile County, The County and the cities of, Bayou La Batre, Chickasaw, Creola, Dauphin Island, Saraland, Satsuma, and Semmes agreed to support the feasibility study in order to help municipalities across the County better understand their community's willingness to participate and invest in growing the region's overall recycling capacity.
- Since 2021, Baldwin County Solid Waste has been planning a new state-of-art MRF located at the Magnolia Landfill that will serve the recycling needs of the entire county. In an effort to acquire an ADEM grant for $350,000 to purchase equipment for the new Baldwin County MRF, three south Baldwin cities partnered with Baldwin County including Gulf Shores, Orange Beach, and Foley. Because Gulf Shores has been involved in a robust recycling program, it was made the lead agency in the application.
- The West Alabama Recycling Partnership comprised of the City of Tuscaloosa, Tuscaloosa County, Tuscaloosa County Park and Recreation Authority, the University of Alabama, and Shelton State Community College, received a grant of $159,000 from ADEM. In 2020, the partnership was also the recipient of $208,000, which was used to purchase a curbside collection sorter truck, drop-off recycling trailer, recycling containers, clear stream containers, and clear stream transporters that made recycling more convenient.
- The Huntsville Solid Waste Disposal Authority and its curbside recycling program, Recycling Alliance of North Alabama (RANA), in partnership with the cities of Huntsville, Madison, and Madison County were awarded $500,000 in grants by ADEM. Since inception of the RANA program in 2019, 80,874 household elected to participate in the curbside recycling program, which helped 8,693 tons of recyclables be diverted from waste during the second year of the program. With continued growth of the program, tonnage was 43% higher than the prior year (2020) and growth is expected to continue to grow as residents continue to sign up for the program. Financial assistance provided by the grant funds helped defray nearly 50% of the

costs associated with the initial purchase of 75,000 95-gallon rolling carts used in the new automated curbside recycling program.

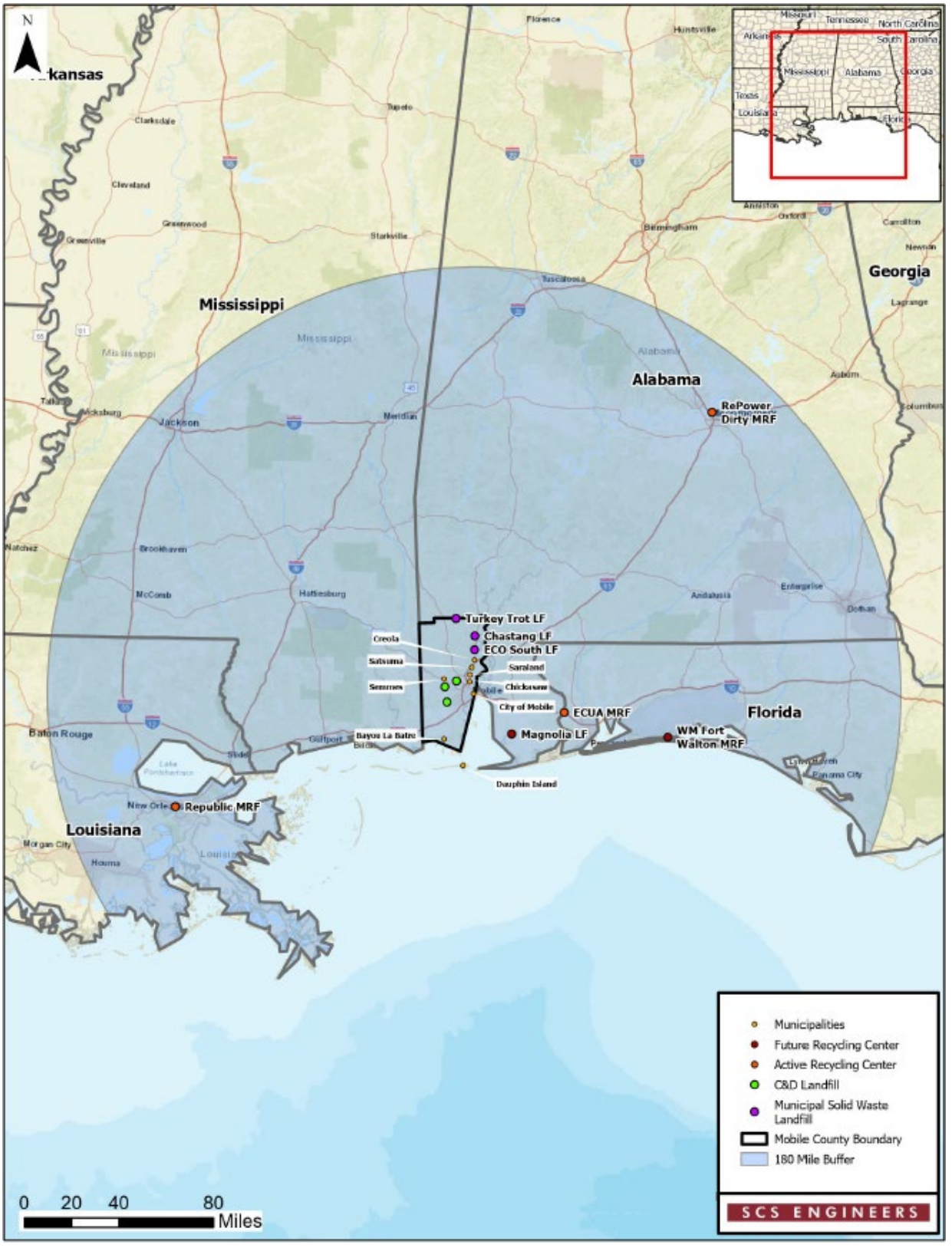
- Although not acting in partnership, it should be noted that the City of Irondale was awarded a $311,777 grant for its recycling program. It's the largest grant awarded by ADEM to a Class 2 municipality and the grant will fund a new recycling pick up vehicle and approximately 2,000, 65-gallon recycling containers with lids. The City of Irondale held a sign up for its recycling program and registered more 1,500 households to participate.

Acting in partnership, as demonstrated from the examples above, not only facilitate grant funding but also help reach economies of scale necessary for cost savings.

4.2 PROCESSING FACILITY LOCATIONS

SCS identified regional MRFs that could be considered as part of developing options for a more robust recycling program for Mobile County and its incorporated municipalities. SCS researched existing and planned recycling processing facilities in the region (e.g., within 180 miles of the City of Mobile center) that may be available to accept recyclable materials from Mobile County and its incorporated municipalities including the City of Mobile for processing and beneficial re-use. The regional recycling facilities are presented as **Exhibit 3**. Additionally, SCS prepared **Table 1** of **Appendix B** to present additional information related to each recycling facility, including: facility location, distance from the city center, general operations description, current capacity, total available capacity, estimated life expectancy, and other insights about each facility. Reducing transportation distances will help to minimize transportation costs. The closest MRFs were identified as the future Baldwin County MRF (expected to be commissioned by March 2024) and the ECUA MRF.

Exhibit 3. Regional Recycling Facilities



5.0 CHALLENGES AND CONTRACTUAL CONSTRAINTS

Contractual constraints refer to legal obligations that restrict an organization from performing certain actions. Constraints for contracts are exemplified in the terms and conditions to which two or more parties agree. Based on a review of the contracts, the following terms and conditions for the most recent contracts present potential restrictions:

- **September 28, 2021 – ECUA Processing Services:** The City of Mobile approved an interlocal Agreement with ECUA for recyclables processing until September 30, 2023, however, the parties reserve the right to terminate the Agreement anytime.
- **May 12, 2023 – Addendum No. 2 to the Agreement between the City of Mobile and Republic Services:** Since it was impractical for the City of Mobile to select a new contractor for hauling services, this addendum extended bin rental and transportation for the City of Mobile's recycling facilities to December 31, 2024. Article 1 of the Agreement states that the service levels may be adjusted upon mutual agreement between the City of Mobile and Republic Services. By January 2025, the City of Mobile will explore new options for its recyclables that may significantly change the services to the current contract.
- **August 9, 2023 – ECUA Interlocal Agreement for Acceptance and Processing of SSR**: This proposed Agreement has an effective date of October 1, 2023 to September 30, 2024. Both parties have the right to terminate the Agreement for convenience.
- **October 13, 2014 – 2023 Goodwill Industries Easter Seals of the Gulf Coast, Inc. Lease Agreement, Addendum, and Sub-recipient Agreement**: The County approved a lease Agreement for Goodwill to use the recycling facility for a period of 25 years with a cost of $1/year. The lease can be renewed for an additional period of 25 years automatically upon its expiration date. According to the Agreement, the lessee or lessor may elect to terminate the lease without liability other than obligations to date, including termination upon 180 days written notice to the other. Under the Sub-Recipient Agreement, the County agreed to disburse funds to Goodwill for an amount not to exceed $450,000 until September 30, 2023 to cover costs.

Based on the above, the main constraint from the contractual obligations appears to be the term of the Agreement between the City of Mobile and Republic Services; however, the Agreement is for a short service interval and expires in December 2024.

In absence of significant contractual constraints to implementing an alternative recycling program, the main challenge will be accumulating the appropriate tonnage of material to achieve economies of scale and identifying where to send the recyclables to. This is further investigated in Section 6.

6.0 RECYCLING PROGRAM OPTIONS

This section provides details on potential long-term recycling program expansion options, which include the following:

- Option #1A – Status Quo (Transport Recyclable Materials from a Drop-Off Site(s) to ECUA City of Mobile and County continues contracting Goodwill to Operate the County Recycling Center)
- Option #1B – Status Quo (Transport the City of Mobile's Recyclable Materials to the Baldwin County MRF or Bay Minette Transfer Station)
- Option #2 – City of Mobile Curbside Collection, development of Transfer Station, and transportation to the Baldwin County MRF (Based on City of Mobile Quantities)
- Option #3 – Partnership Curbside Collection, development of Transfer Station, and transportation to Baldwin County MRF
- Option #4 – Partnership Curbside Collection including development of MRF within Mobile County
- Option #5 – Expand Drop-Off Opportunities

6.1 OPTION 1 - STATUS QUO

Overview

For this option, the City of Mobile and Mobile County would continue to operate their recycling programs "as is". Recyclable materials collected at the City of Mobile drop-off facilities are transported by Republic Services to the ECUA MRF in Cantonment, Florida. The City of Mobile secured a contract with ECUA for the processing and marketing of recyclable materials at a favorable processing fee of $15/ton. The processing fee will significantly increase in the latter half of 2023 to $60/ton.

The County owns a source-separated recycling center and contracts Goodwill to operate the program and coordinate the sale of recyclable materials. The County's low contamination rates allow the material to be processed (baled) at the recycling center and directly shipped to different material processors.

Mobile County's source-separated recycling operation in Mobile, AL

Benefits

SCS identified the following benefits for the City of Mobile and County to continue operating their recycling centers:

- **Local** – The City of Mobile and County recycling centers are located in eastern, central, and western Mobile. With three recycling centers to choose from in different areas of the County, most residents are able to conduct a short drive for recycling.
- **Community Involvement** - The City of Mobile and County recycling centers act as community hubs that allow for socialization amongst its residents. The County also attracts dozens to over a hundred volunteers each year to help manage the facility. Volunteers help educate others on recycling and spread the word about the recycling program.
- **Established/Known Market –** The County has invested significant capital in the infrastructure and equipment of their facility and has established buyers for the commodities that are produced. Market forces, however, can have a strong impact on a well-established recycling program like the County's. However, industry experts are cautiously optimistic that the recycling markets will rebound, albeit in two to five years. SCS toured the facility and found it to be clean and well managed.
- **Less Risk Over the Short-Term –** Relying on private industries to provide essential processing and marketing of recyclable materials includes some risk as the current situation with ECUA illustrates. Operation of the County-owned recycling center alleviates some of that risk by having alternative outlets and some storage to buffer market volatility.
- **Public Desire to Recycle Maintained** - As was witnessed from the City of Mobile's recycling survey (over 91% of residents believe that recycling is important and maintain the desire to do so) and the number of residents visiting each facility, residents seek opportunities to recycle and that requires outlets for materials to flow.
- **Benefit from Low Contamination –** Both the City of Mobile and Mobile County have a reputation for providing clean recyclable materials for processing and marketing. In utilizing ECUA and different material processors, the County and City of Mobile have established credibility in providing pure streams of materials with little contamination. In today's market, having trusted partners in the recycling loop is a significant advantage and one that many recyclable materials processers desire.

The City of Mobile's single-stream drop-off facility in Mobile, AL

- **Public Education–** Modifying the operations of the current source-separated recycling center and single-stream drop-off facilities, while can be done, is not desirable as the public is trained on how to properly use each program.
- **Program Flexibility–** Struggling recycling centers can update their programs to focus on a smaller, more targeted list of recyclables that tend to weather instability best because they have a higher economic value and a higher impact in mitigating environmental impacts. According to research done by the University of Florida, these materials include newspaper, cardboard, aluminum cans, steel, cans, HDPE, and PET bottles.
- **Lessened Environmental Impacts** –Managing recyclable materials locally mitigates environmental concerns associated with transportation such as air pollution by reducing the number of miles it takes to transport materials to market.

Challenges

SCS identified the following challenges with the status quo:

- **Risk over the Short-Term and Reduced Control** – Relying on privately owned and operated recycling facilities to accept materials is common practice by local governments throughout the country. Contracts can be structured to require advance notice of changes to the materials accepted; however, local governments will ultimately need to modify their recycling program to conform to the requirements of the recycling facility. The City of Mobile experienced this situation when the ECUA MRF shut down on multiple occasions without advance notice. This left the City of Mobile only a short window of opportunity to find an additional market. The City of Mobile contracted Republic Services, which significantly increased processing and transportation costs to their Louisiana facility at a hefty fee of $335/ton. Additionally, the City of Mobile had to notify its residents that glass was temporarily not accepted as residents expected to continue recycling the commodity. For the County, market forces can have a strong impact on a well-established recycling program.
- **Loss of Economic Benefit** –Managing waste and recyclable materials locally helps contribute to the local economy. Processing recyclable materials locally also has economic benefits to the County by creating jobs which are lost when the materials need to be transported to a distant facility.
- **Equipment Maintenance** – Substantial equipment breakdowns have contributed to inefficiencies in recycling for the County and loss of revenue.
- **Low Volumes** – Currently, the Partnership's recycling rate is estimated to be less than 1%, far below the state's diversion goal of 25%. A major program change is necessary to significantly increase volumes to desired recycling rates if the status quo is maintained.
- **Transportation Costs** – The effect of transportation on recycling program expenditures outweigh the processing costs for the City of Mobile. Transportation costs to the ECUA MRF, about 50 miles away, is approximately 54% of the recycling program costs. The City of Mobile may consider steps to reducing transportation costs, such as using a larger compacting vehicle and making sure the containers are adequately filled.

Costs

Option #1A - Status Quo

The County's revenue from the sale of recyclable materials in FY 2022 was $213,928 while the expenses for operations and maintenance was $405,398. The difference (net revenue) equates to a cost of approximately $136/ton. **Table 16** presents the current annual recycling program costs for the County. With the new rate increase impending, the City of Mobile's costs to transport recyclable materials to the ECUA MRF will be approximately $131/ton. It should be noted that while the City of Mobile 's costs are lower, its operations and maintenance costs were not considered for the analysis. Because of this, the City of Mobile 's costs may be higher, particularly if employee salaries are accounted for. **Table 17** presents the new annual recycling program costs for the City of Mobile.

Table 16. The County's Current Annual Recycling Program Costs

County Recycling Center Costs		
Revenue	$	213,928
Expenses	$	405,398
Net Revenue	$	(191,471)
Tonnage	$	1,404
Cost Per Ton	**$**	**136**

1. Table previously shown in Section 3.4

Table 17. The City of Mobile's Current Annual Recycling Program Costs

Destination	Equipment Rental	Transportation	Processing Fees	Total Cost
Closest Facility (ECUA MRF)	$ 870	$ 63,832	$ 54,660	$ 119,362 [A]
Cost Per Ton			**$/ton**	**$ 131**

[A] Operations and maintenance costs were not considered for the City of Mobile's cost analysis.

Option #1B - Transport City of Mobile recyclables to the future Baldwin County MRF or Bay Minette Transfer Station

With the proposed Baldwin County MRF, the City of Mobile will have the option to transport its program recyclables with the exception of glass and other metals to either location in the future. For this option, the City of Mobile would continue to operate their recycling program by status quo but rather than transport the recyclables to the ECUA MRF, the recyclables would be hauled to the Baldwin County MRF by one of two ways:

1) Direct haul to the proposed Baldwin County MRF in Summerdale, AL.
2) Direct haul to a new Transfer Station.

Baldwin County Solid Waste representatives provided SCS with a preliminary estimate of $30/ton processing fee, however, the Bay Minette transfer station may be a closer option to Mobile and would likely charge an additional $15/ton. If the City of Mobile plans to contract transportation of recyclable materials to the Baldwin County MRF, the cost has been estimated to be approximately $92,000 annually in transportation and processing fees. Costs to haul the materials to the closer Bay Minette Transfer Station will cost about $91,800. Both options are similar in costs and equate to $101 per ton. Table 18 and Table 19 present the proposed annual recycling program costs for each option considered. For these options, the effect of transportation on recycling program expenditures will outweigh the processing costs. Transportation costs to the Baldwin MRF, approximately 45 miles away, will be approximately 70% of the recycling program costs. Hauling to the closest facility, Bay Minette Transfer Station located approximately 37 miles away, will be less at about 55%. However, this option will incur an additional $15/ton fee. Both options require approximately $150,000 additional costs of rental, maintenance, and operational costs associated with the drop-off facilities.

Table 18. Proposed Annual Recycling Program Cost to Transport Recyclables to the Baldwin MRF

Commodity	Destination	Equipment Rental	Transportation	Processing	Total Cost	$/Ton
Single-Stream Recyclables	Baldwin MRF	$870	$64,702	$27,330	$92,032	**$101**
Percent of Total Annual Cost (rounded)		1%	70%	29%		

Table 19. Proposed Annual Recycling Program Cost to Transport Recyclables to a New Transfer Station

Commodity	Destination	Equipment Rental	Transportation	Processing	Total Cost	$/Ton
Single-Stream Recyclables	Bay Minette Transfer Station	$870	$ 50,802	$ 40,995	$ 91,797	**$ 101**
Percent of Total Annual Cost (rounded)		1%	55%	44%		

6.2 OPTION 2 – CITY OF MOBILE CURBSIDE COLLECTION TO THE BALDWIN MRF OR NEW TRANSFER STATION

Overview

The purpose of curbside recycling is to efficiently collect and deliver high quality materials from households to the circular economy. Like other large-scale systems in the U.S., such as transportation, healthcare, and electricity generation, curbside recycling encompasses many different stakeholders, approaches, and issues. The main issues include communities increasingly paying more to send materials to a MRF than to a landfill, and the lack of critical operating funds. The economic impacts of the MRF processing charges on top of high contamination rates have led a limited number of communities to eliminate curbside. Improving community curbside recycling programs require addressing challenging market conditions, providing substantial funding support, and addressing inexpensive landfill processing fees that make disposal options significantly cheaper than recycling. However, the enduring value that citizens place on curbside recycling is helping the vast majority of community programs sustain their services. In the City of Mobile, curbside recycling services are mainly offered through voluntary subscriptions.

For this option, curbside collection costs were considered for the following scenarios based on the City of Mobile's recycling rate and recyclable material destination:

- Option 2A - Implement curbside recycling collection (assuming 10% recycle rate) in the City of Mobile only and transport via a transfer station to the proposed Baldwin County MRF located in Summerdale, AL.

- **Option 2B** - Implement curbside recycling collection (assuming 25% recycle rate) in the City of Mobile only and transport via a transfer station to the proposed Baldwin County MRF located in Summerdale, AL.

Benefits

- **Ease and Convenience leads to increased participation** – Inconvenience is one of the main reasons that people don't recycle. Curbside recycling services encourage people to recycle because they make the process very simple. Recyclable materials are simply placed into a bin and rolled out to the curb for collection. The potential for anyone to do so increases access to recycling in the community.
- **Conservation of Landfill Space** – Studies show that more than half of the MSW entering landfills can potentially be recycled. Curbside recycling would increase the tonnage diverted from the landfill if done correctly. Environmental impacts from landfills include the loss of hundreds of acres for natural habitats (approximately 600 acres are destroyed to create one landfill); groundwater impacts as liners are not leak proof, and the release of methane gas.
- **Community Pride and Public Desire to Recycle Maintained** – With curbside recycling, members of the community see that their neighbors are contributing to making a positive difference. People recycle more because others around them are doing so. Additionally, based on the City of Mobile conducted recycling survey, residents actively seek opportunities to recycle.

Challenges

- **Educational Changes** – Modifying the operations of the current drop-off offering to residential curbside requires a new educational program and outreach. Although a proposed curbside collection program would accept single-stream materials similar to what the City of Mobile is currently accepting, education emphasizing allowable materials to an increased population not previously recycling in order to reduce contamination rates is imperative. Education of the residents should begin several months prior to the start of the program and continuous education is critical if the program is to be successful.
- **Recycling Contamination** – Contamination in recycling is a nationwide problem. In recent years, most municipalities that have discontinued curbside recycling have contributed it to contamination rates and missing out on key revenue. The key to contamination reduction is re-education.
- **Transfer Station needed** – Utilizing curbside collection vehicles to perform "long haul" transportation (i.e., 40-50 miles) to the nearest MRF location is not efficient nor practical and is costly in terms of capital and operations and maintenance for the collection vehicles. Therefore, this option assumes that a new transfer station is developed in the Mobile area or an agreement is in place for an existing privately-owned transfer station to gain the benefit of consolidating recyclable materials delivered in curbside collection vehicles at a transfer station and transported to via long-haul trailers to a MRF.

Costs

Costs to implement curbside recycling were evaluated for the City of Mobile by considering an incremental approach: starting at a 10% recycling rate before reaching Alabama's state diversion goal of 25%. A significant cost for this option is the creation of a transfer station to aggregate the recyclable materials for efficient transport to a MRF. It takes time for communities to increase residents' participation in a recycling program. Because a 10% recycling rate is incremental on the

way to a 25% recycling rate, the City of Mobile should plan for a transfer station that can accommodate the larger recycling rate. Table 20 presents the cost of a transfer station sized to accommodate 46,000 tons of recyclable materials annually.

Table 20. Planning Level Costs associated with the development of a Transfer Station in Mobile

Communities Included	**City of Mobile**
Facility Size (square feet)	**15,000**
Tons Per Year (TPY)/ Tons Per Day (TPD)	**46,000 TPY/175 TPD**
Construction Cost	$ 2,500,000
Contingency	40%
Cost and Contingency	$ 3,500,000
Debt Service	$ 185,000
Number of Trailers	14
Debt Service	$ 250,000
Salary and Benefits	$ 390,000
Professional Services	$ 6,300
Utilities	$ 4,200
Supplies	$ 2,000
Minor Capital Outlay	$ 4,200
Total O&M	$ 406,700
Annual Costs	$ 841,700
Cost Per Ton [A]	**$ 18**

[A] Rounded to the nearest dollar.

Table 21 presents annual costs for curbside recycling for two levels of recycling rate achievement: 10% and 25%. Both annual costs include the cost of curbside collection and the operation of a transfer station sized to accommodate up to 46,000 tons (needed for the City of Mobile to achieve a 25% recycling rate).

Recycling 10% of the City of Mobile's waste or approximately 18,425 tons annually and sending the recyclable materials to the Baldwin County MRF equates to a cost of $17/month per household. Recycling 25% of the waste stream or 46,000 tons annually equates to a cost of approximately $19/month per household.

Table 21. Curbside Recycling Costs for the City of Mobile

Recycling Rate	10%	10%	25%	25%
Curbside Collection Transportation To:	**Baldwin MRF**	**Bay Minette TS**	**Baldwin MRF**	**Bay Minette TS**
Number of Households	**70,000**	**70,000**	**70,000**	**70,000**
Pickup Cost Per Household Per Month	$15	$15	$15	$15
Total Monthly Collection Cost	$1,050,000	$1,050,000	$1,050,000	$1,050,000
Total Annual Collection Cost	$12,600,000	$12,600,000	$12,600,000	$12,600,000
Annual Tonnage	18,425	18,425	46,000	46,000
MRF Processing/Tip Fee	$30	$45	$30	$45
Total Disposal Costs	$552,750	$829,125	$1,380,000	$2,070,000
Cost Per Mile	$2.50	$2.50	$2.50	$2.50
Roundtrip Miles	95	74	95	74
Number of Hauls (Based on 10 tons/haul)	1843	1843	4600	4600
Total Hauling Costs	$437,594	$340,863	$1,092,500	$851,000
Transfer Station Investment and Operational costs annualized	$916,492	$916,492	$916,492	$916,492
Total Costs	**$14,506,836**	**$14,686,479**	**$15,988,992**	**$16,437,492**
Cost Per Ton	**$787**	**$797**	**$348**	**$357**
Annual Cost/Household	$207	$210	$228	$235
Total Household Cost/Month	**$17.30**	**$17.50**	**$19.10**	**$19.60**

[A] The transfer station was sized to accept 46,000 tons of recyclable materials annually for all options.
[B] Rounded to the nearest dollar.

6.3 OPTION 3 –PARTNERSHIP CURBSIDE COLLECTION TRANSPORTATION TO BALDWIN COUNTY MRF

Overview

The proposed Baldwin County MRF, which will be located at the Magnolia Landfill in Summerdale, Alabama, is expected to be commissioned by March 21, 2024 for single-stream recycling. The County has indicated that it is interested in processing the City of Mobile's program recyclables with the exception of glass and other metals. Baldwin County is planning to have at least 10,000 tons of throughput initially and it anticipates a capacity of up to 40,000 tons per year without having to expand the facility.

For this option the Partnership would work together to implement curbside recycling and divert 25% or 92,750 tons of the MSW generated. The recyclables would be transported to the Baldwin County MRF by one of two ways:

- Option 3A - Direct haul to the proposed Baldwin County MRF in Summerdale, AL.

- **Option 3B** - Direct haul to the proposed Bay Minette Transfer Station located near the Redhill Road Extension.

Baldwin County has preliminarily indicated it would charge a $30/ton processing fee; however, the transfer station is slightly closer and would charge an additional $15/ton.

Benefits

SCS identified the following benefits for the Partnership to utilize Baldwin County's MRF:

- **Established/Known Market –** Baldwin County has invested significant capital in the infrastructure and equipment of the upcoming facility and has established buyers or is in the process of establishing buyers for the commodities that are produced. Plans for an aluminum plant in Bay Minette should increase the demand for scrap aluminum, one of the materials recycled by most local municipal programs. Novelis announced plans in May 2022 to build an aluminum and rolling mill. Markets for cardboard are known and Baldwin County is stepping up operations to pick up cardboard by having purchased two load trucks and front load boxes. Glass is not anticipated to be recycled at the new MRF and finding facilities that recycle plastic is proving to be challenging. Although there is no guarantee that this facility will be up and running by the anticipated commission date of March 21, 2024, a lot of planning and investment is going into the facility and it appears that it will be well managed.
- **Public Desire to Recycle Maintained** - As was identified in the City of Mobile's recycling survey (2021), residents seek opportunities to recycle and that requires outlets for materials to flow.
- **Public Education Mostly Maintained –** The City of Mobile recognizes that modifying the operations of their current single-stream convenience-center based recycling program, while can be done, is not desirable as the public is trained on how to properly use the program. Thus, utilizing Baldwin County's MRF allows the majority of services to continue with the exception of recycling glass and other metals. For the County accustomed to source-separation, the change would be more drastic.

Challenges

SCS identified the following challenges of using Baldwin County's MRF:

- **Reduced Control –** Similar to the 'Status Quo' option, relying on other MRF operators to be the sole provider of recycling capacity limits the ability to modify and expand a program. The Partnership will also be subject to any changes to the requirements of the recycling facility.
- **Securing Commitment from all Participating Communities** – In order to meet the state diversion goal of 25%, it is imperative that the Partnership commit to implementing a curbside recycling program that will generate the anticipated quantities. Restrictions in current collection agreements of the partnering communities would have to be reviewed to align policies.
- **Additional Capacity Required** – As stated above, Baldwin County is planning to have a throughput of least 10,000 tons of throughput initially and ramping up to 40,000 tons per year without having to expand the facility. This leaves a remaining capacity of approximately 30,000 tons. However, curbside collection for the Baldwin county residents will be considered at a later date and could fill some of the stated MRF capacity.

Costs

To implement this option, the costs of curbside recycling and the operations costs of a transfer station were included. Recycling 25% of the total waste stream or 92,750 tons annually equates to a cost of $18/month per household if the recyclable materials are transported to the Baldwin County MRF and approximately $375/ton. The cost per ton to send the recyclables to the Bay Minette Transfer Station equates to $384/ton or a cost per household of $19/ton. Transfer station development and annual operation costs for this capacity equate to approximately $1,320,133. **Table 22** presents the costs for Option 3.

Table 22. Curbside Recycling Costs for the Partnership

Recycling Rate	**25%**
Curbside Collection Transportation To:	**Baldwin MRF**
Number of Households	**158,045**
Pickup Cost Per Household Per Month	$15
Total Monthly Collection Cost	$2,370,675
Total Annual Collection Cost	$28,448,100
Annual Tonnage	92,750
MRF Processing/Tip Fee	$30
Total Disposal Costs	$2,782,500
Cost Per Mile	$2.50
Roundtrip Miles	95
Number of hauls (Based on 10 tons/pull)	9,275
Total Hauling Costs	$2,202,813
Transfer Station Investment and Operational Costs annualized	$1,320,133
Total Costs	**$34,753,545**
Cost Per Ton	$375
Annual Cost/Household	$220
Total Household Cost/Month	$18.40

6.4 OPTION 4 -PARTNERSHIP CURBSIDE COLLECTION AND DEVELOP MRF WITHIN MOBILE COUNTY

If the Partnership were to generate the tonnage required to achieve a 25% recycling rate, consideration of establishing a MRF in Mobile is an option. To make this option feasible, the Partnership would have to modify their programs and transition to a curbside recycling program to reach economies of scale. Significant capital is needed to invest in a MRF. As a point of reference, the 60,000 square-foot Baldwin County MRF is anticipated to cost approximately $10 million in capital. Given this information, SCS identified facility costs for the two scenarios:

- **Option 4A** – Estimated cost of the facility is $10 million. All other factors were kept the same and the throughput was estimated at 92,750 tons per year or 25% recycle rate.
- **Option 4B** – Estimated cost of the facility is $20 million. All other factors were kept the same and the throughput was estimated at 92,750 tons per year or 25% recycle rate.

Benefits

SCS identified the following benefits of establishing recycling capacity in the region:

- **Economic Expansion**– By establishing their own MRF, the Partnership will be investing in local infrastructure to serve the needs of their constituents. A local MRF will create jobs during the planning, construction, and operational phases of the project. This can help economic growth in the region.
- **Reduced Environmental Impacts** –Managing recyclable materials locally mitigates environmental concerns such as air pollution by increasing circular economy locally and reducing transportation of materials to locations outside the region.
- **Lessons Learned** – Baldwin County is in the process of constructing a MRF. The Partnership would not be the first local government to implement this type of facility. The Partnership should rely on information provided by Baldwin County and others to help with implementing a transfer station. Relying on lessons learned has the potential to avoid pitfalls and common mistakes that may otherwise occur and be overlooked throughout all phases of the project.

Challenges

SCS identified the following challenges of establishing a transfer station in the region:

- **Increased Risk** – With any new facility, there is risk associated with its implementation. The risk of such a facility is greater if the County does not receive the quantity of recyclable materials that the MRF has been sized to process.
- **Cost** – As discussed above, having local recycling capacity affords the significant benefit of reducing transportation costs. However, should the Partnership decide to finance a capital project such as a MRF, a significant amount of capital would be required.
- **Educational Changes** – Because this option requires curbside collection to reach economies of scale, modifying the operations of the current recycling centers to one of curbside requires a new educational program and outreach for the Partnership. Education of the residents should begin several months prior to the start of the program and continuous education is critical if the program is to be successful.
- **Recycling Contamination** – Contamination in recycling is a nationwide problem. In recent years, most municipalities that have discontinued curbside recycling have contributed it to contamination rates and missing out on key revenue. The key to contamination reduction is re-education.
- **Securing Commitment from all Participating Communities** – In order to meet the state diversion goal of 25%, it is imperative that the Partnership commit to implementing a curbside recycling program that will generate the anticipated quantities. Restrictions in current collection agreements of the partnering communities would have to be reviewed to align policies.

Costs

Using the anticipated quantity of 92,750 tons of recyclable materials and estimated costs to construct the MRF under the options described in the section above, the associated facility costs are presented in **Table 23.** Constructing a MRF that has been properly sized to accept all the recyclable materials from the Partnership would result in a $20 per ton costs if the initial construction cost was $10 million. If the MRF were built with an initial cost of $20 million, MRF processing costs would increase to $28 per ton to pay the debt service. In the likely event the Partnership does not want to pursue ownership and operations of a MRF, the investment by a third-party owner/operator would be similar and costs per ton would likely be somewhat higher.

The following specifications are consistent for the facility:

- Recyclable materials will arrive at the facility as single-stream material; no separation or screening of materials for contamination will occur at the facility;
- Facility operation is for eight hours/day for five days/week (260 days/year);

Table 23. MRF Investment Costs for Varying Construction Costs for Partnership based upon 25% Recycle Rate

Tons Per Year (TPY)/ Tons Per Day (TPD)	**92,750 TPY/360 TPD**	**92,750 TPY/360 TPD**
Construction Debt Service		
MRF Construction Cost	**$ 10,000,000**	**$ 20,000,000**
Contingency	40%	40%
Cost and Contingency	$ 14,000,000	$ 28,000,000
Debt Service	$ 756,438	$ 1,512,875
Trailer Debt Service		
Number of Trailers	32	32
Debt Service	$ 553,193	$ 553,193
Operations and Maintenance		
Salary and Benefits	$ 493,500	$ 493,500
Professional Services	$ 12,500	$ 12,500
Utilities	$ 6,120	$ 6,120
Supplies	$ 3,360	$ 3,360
Minor Capital Outlay	$ 8,400	$ 8,400
Total O&M	$ 523,880	$ 523,880
Annual Costs	$ 1,833,510	$ 2,589,948
MRF Processing Fee Per Ton	**$ 20**	**$ 28**

Including the MRF processing fee, recycling 25% of the Partnership's waste stream (92,750 tons) equates to a cost per ton of $326/ton or $16/month per household if the MRF costs $10 million to construct. If the MRF cost is doubled, the cost per ton equates to $335 and the household cost per month also equates to $16. **Table 24** presents the MRF costs.

Table 24. MRF Processing Costs Per Ton and Per Household based upon 25% Recycle Rate

Communities Included	Partnership	
Pickup Cost Per Household Per Month	**$ 15**	**$ 15**
Number of Households	**158,045**	**158,045**
Total Monthly Collection Cost	**$ 2,370,675**	**$ 2,370,675**
Total Annual Collection Cost	**$ 28,448,100**	**$ 28,448,100**
Recycling Rate	25% Recycling	25% Recycling
Annual Tonnage	92,750	92,750
MRF Processing Fee Per Ton	$ 20	$ 28
Total Disposal Costs	$ 1,833,510	$2,589,948
Total Costs	$ 30,281,610	$ 31,038,048
Cost Per Ton	**$ 326**	**$ 335**
Annual Cost/Household	$ 192	$ 196
Total Household Cost/Month	**$ 16**	**$ 16**

The quantity of material processed significantly impacts the size and cost of the MRF. Although reaching the state's 25% goal is something to strive for, it may not be feasible without commitment from all the communities and continuous education. Additional material would improve economies of scale and can be obtained from other jurisdictions and/or the commercial sector. Table 25 presents the annual quantities of material in the City of Mobile and County's recycling program as well as potential recyclable quantities from the commercial/industrial sector. As shown, the City of Mobile and County generated a total of 2,314 tons in FY 2022 through their recycling centers. In order to reach economies of scale and generate the quantity anticipated, the Partnership would have to transition to a curbside recycling program and/or accept recyclables from other sectors.

Table 25. Annual Quantity of Recyclables from existing City of Mobile and County Programs

Source	Commodity	Amount (Tons)
City of Mobile	Single-Stream Recyclables	911
Mobile County	Source-Separated Recyclables	1,402
Commercial/ Industrial Sector [A]	Mixed Recyclables	12,130
Total		14,443
Curbside Tonnage Required		**92,750**

[A] Commercial material tonnage was based on Partnership for Environmental Progress data.

Commercial Sector

To generate the quantities anticipated, the Partnership would have to transition to a curbside recycling program, however, a MRF can be established that not only accepts recyclable materials from municipal programs, but also accepts materials from commercial and industrial facilities

(private haulers) operating in the region. A facility sized to accept material from private haulers would provide a recycling solution on a more regional scale and may fill a void that limits recycling in the commercial sector. Much of the additional capacity needed to accommodate material collected by the commercial sector is for cardboard, a high-commodity value material. Based on the PEP study (See Section 8.3), approximately 33% of recyclable materials consist of cardboard.

6.5 OPTION 5 - EXPANDING DROP-OFF OPPORTUNITIES

Overview

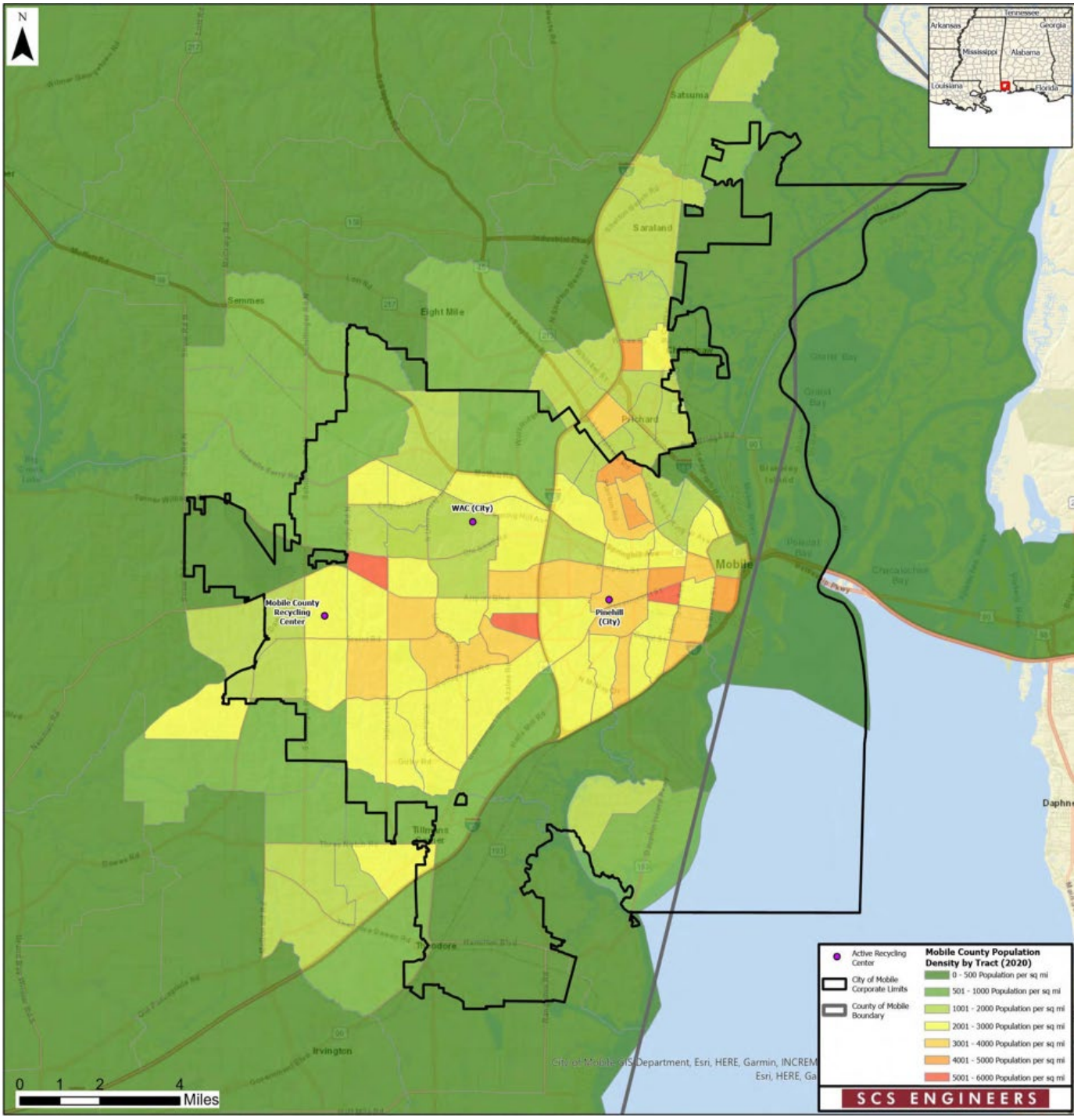
For this option, the Partnership would consider developing an additional drop off center at a location convenient to its residents. With past experience from developing this type of facility, the Partnership would avoid pitfalls and common mistakes that may otherwise occur and be overlooked throughout all phases of the project. Based on experience, the added expense to remove contaminants and sort materials into marketable commodities would be unnecessary because the City of Mobile and County's recycling programs produce clean streams of materials. By monitoring these sites, contamination has been minimal, making the recyclables considerably more attractive for sale as commodities. One comparable city that is considering transitioning to using a staffed drop-off recycling facility is Pensacola, which has ended their curbside recycling program in October 2023.

Pensacola's decision to end curbside was the result of several factors including:

- Recyclables from customers averaged more than 50% contamination when delivered to the ECUA MRF, resulting in the recyclables being taken to the landfill
- Due to rising costs, associated with recycling, ECUA increased its drop-off rates for municipal customers. In order to continue mandatory curbside recycling service for all customers, the city would have to increase the rates for city sanitation customers.
- The change will allow for the city to evaluate the effectiveness of recycling and determine the most viable solution. This may involve opt-in-curbside recycling services and/or a staffed drop-off recycling facility in partnership with ECUA.

While the benefits outweigh the challenges for drop-off facilities, it is important to site a location that would increase recycling collection. Exhibit 4 illustrates the County's population density by census tract. Suitable locations (areas with high density) are shown in red and dark orange; however, consideration should also be placed in more rural areas to increase community involvement.

Exhibit 4. Mobile County and City of Mobile Population Density by Census Tract



Benefits

- **Increased Options & Reduced Transportation Costs –** Establishing an additional recycling for the County's recyclables affords the County with more options for their materials. Once materials are baled, and the bales have little to no contamination, there are more options to market the material.
- **Economic Expansion–** By establishing an additional recycling facility, investments will be made in local infrastructure to serve the needs of its constituents. A local recycling facility will create jobs during the planning, construction, and operational phases of the project. This can fuel economic growth in the County and region. Additionally, local grants prioritize recycling programs done in partnership and who support a hub and spoke model.
- **Existing Experience –** The City of Mobile and County have established their own recycling facilities, where materials are collected and transported to either a MRF or shipped to different material processors. Relying on their experience to develop these facilities has the potential to avoid pitfalls and common mistakes that may otherwise occur and be overlooked throughout all phases of the project. SCS toured the facilities and found them to be clean, well-managed, and with a fair number of customers and material flow.
- **Less Risk Over Short-Term –** Relying on private industries to provide the essential processing and marketing of recyclable materials contains some risk. The current situation with ECUA illustrates how outside sources are not solely reliable. In regards to the County, market forces can have a strong impact on a well-established recycling program. However, industry experts are cautiously optimistic that the recycling markets will rebound, albeit in two to five years. Using a variety of material processors allows the County to maintain its recycling program investment until additional options develop.

- Other benefits are similar to those of the 'Status Quo'

Challenges

- **Low Volumes –** Curbside recycling is known for generating the most quantities of recyclable materials. Although curbside recycling typically collects more material, the materials are not always recyclable and are known for containing significant contamination unless a strong educational and enforcement program is implemented.

  As evidenced from Pensacola and Bradenton, Florida, curbside recycling generated more material but more than half of it was not recyclable. In 2022, curbside recycling was discontinued in Bradenton and ten new recycling drop off facilities were opened. In June 2021, just over 20 tons of recyclable materials were collected from curbside but more than half of it was contaminated and not recyclable. In June 2022, the first month of the transition away from curbside recycling, nearly 15 tons were collected at the drop-off sites and almost all of it was recyclable. While it is too early to gauge the success of the transition, the early results show a net increase in recycling.

Costs

Costs for this option are comparable to the costs provided in Section 6.1 (Status Quo).

7.0 OTHER RECYCLING OPTIONS

Waste generation quantities for 2020 were characterized by sector and composition to identify maximum recycling potential in the 'Assessment of Current Conditions Memorandum'. And while typical recyclable materials are the focus of this study, the memorandum helped identify unmet needs that can maximize recycling potential. Future opportunities to increase diversion quantities lie in education and outreach, increasing recycling participation and tonnage within the commercial sector, targeting the beneficial use of organics currently disposed, and establishing C&D diversion programs.

7.1 COMMERCIAL/INDUSTRIAL PARTICIPATION OPTIONS

Commercial waste tends to be highly variable due to the range of business activities at commercial establishments. For example, retail stores tend to have higher quantities of cardboard but lower quantities of food scraps. Conversely, restaurants and grocery stores tend to have higher quantities of food scraps but lower quantities of recyclable paper.

Commercial waste quantities and composition are distinctive to the community where generated. Factors that affect the quantity and composition of the commercial waste stream in Mobile include:

- The blend of commercial activity (types of businesses) in the County
- The size of commercial activity (measured by number of employees)
- The local solid waste management infrastructure (proximity and availability of establishments for material donations, reuse, recycling, composting, and energy recovery)

The quantity of commercial waste generation in Mobile was estimated in the 'Assessment of Current Conditions Memorandum' by combining available data about the commercial sector with available metrics about commercial waste generation. The two sources used included:

- Data about the Commercial Sector – The U.S. Bureau of Labor Statistics (BLS) maintains employment data for individual counties in the U.S. according the North American Industry Classification System (NAICS). The BLS reports employment in the County, using about 80 NAICS codes.
- Metrics about Commercial Waste Generation – California Department of Resource Recycling and Recovery (also known as CalRecycle) commissioned a large study to estimate commercial waste generation rates for 15 industry groups (*2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California*). Waste generation rates for each of these industry groups are presented in average tons per employee per year.

To estimate commercial waste generation in the County, annual 2022 employment for each of the approximately 80 NAICS codes reported by the BLS were matched with one of the 15 industry groups assessed in the 2014 CalRecycle Report. Table 26 presents estimated annual commercial waste generation quantities of about 277,500 tons. This includes waste materials that were disposed of in a landfill, recycled, composted, or diverted through other programs (donation or reuse). Of the approximate 371,000 tons of annual waste generated from the Partnership, it is estimated that 277,500 tons (almost 75 percent) is generated from non-residential sources.

This large quantity presents an opportunity to include commercial recycling in the current and future recycling programs. Including commercial materials into the recycling stream has been successful in Collier County, Florida, where commercial recycling is mandatory. If the City of Mobile and/or County allow businesses to utilize the drop off sites, there will need to be sufficient capacity. The City of Mobile could start by allowing just commercial cardboard since that material is easily baled and usually has a high market value. If the City of Mobile and County consider expanding capacity at their drop off sites, additional materials may be allowed from the commercial sector.

Table 26. Estimated Annual Commercial Waste Generation in Mobile County

	Commercial Industry	Waste Generation Rate (lbs./employee/year)	Number of Employees	Annual Waste (tons)
1	Arts, Entertainment, & Recreation	3.08	1,444	4,448
2	Durable Wholesale & Trucking	2.99	14,016	41,908
3	Education	0.50	4,848	2,424
4	Hotels & Lodging	2.14	1,674	3,582
5	Manufacturing - Electronic Equipment	0.75	285	214
6	Manufacturing - Food & Nondurable Wholesale	1.85	1,098	2,031
7	Manufacturing - All Other	1.50	16,035	24,053
8	Medical & Health	0.74	26,966	19,955
9	Public Administration	0.39	6,754	2,634
10	Restaurants	2.92	14,249	41,607
11	Retail Trade - Food & Beverage Stores	6.64	2,847	18,904
12	Retail Trade - All Other	2.41	17,098	41,206
13	Services - Management, Administrative, Support, & Social	1.44	11,532	16,606
14	Services - Professional, Technical, & Financial	2.31	8,653	19,988
15	Services - Repair & Personal	1.50	2,696	4,044
16	Not Elsewhere Classified	1.20	28,210	33,852
Total			**158,405**	**277,456**

SCS reviewed survey data obtained by the Partners for Environmental Progress (PEP) in 2021. PEP surveyed its approximately 200-member companies on their quantities of recyclables generated on a monthly basis and approximately 10% of the facilities responded, providing the data in **Table 27**. Of the ten percent of member companies that responded, respondents generate approximately 1,213 tons per year of recyclable material. If all of the facilities had responded, it can be assumed that the commercial sector generates approximately 12,130 tons of recyclable materials on an annual basis. It is also assumed that at least 25% (based upon the state's goal) of the waste generated from the commercial sector can be diverted, which equates to approximately 70,000 tons of recyclable materials per year.

Table 27. Recyclable Quantities in the Commercial Sector

Materials	Approx. Monthly Quantity (in lbs.)
Cardboard	66,952
Electronic Waste	3,770
Metals	23,440
Paper	483
Plastic Bottles	2
Plastics #1-2	13,484
Plastics #3-7	1,800
Single- Stream	92,256
Total (Monthly Quantities)	**202,187**
Total (Annual Quantities)	**2,426,244**
Total (Annual Quantities in Tons)	**1,213**

As evidenced from the community engagement meetings, there is a significant concentration of manufacturing and industry within the Mobile area that appear to be interested in subscribing (paying) for an outlet to recycle their materials. Feedback from the meetings described the difficulties of transporting the materials to a location that will accept them, the time required to transport the materials, and how transporting the materials in inadequate vehicles presents additional expenses and hardship. Accordingly, consideration should also be given to the type of recyclable materials generated at commercial/industrial establishments as in some cases the recyclable materials can be segregated at the source and may be able to by-pass traditional collection programs and be delivered directly to recyclable material recovery facilities.

To better penetrate the commercial/industrial sector, different approaches should be considered. The first is voluntary, however, this is currently the case in the City of Mobile and the Partnership and it is not achieving a high level of participation nor associated tonnage. While challenging politically, another approach is making recycling mandatory. This approach has proven successful in municipalities across the county (e.g., Collier County, FL, Lake County, FL, Lee County, FL, Orange County, FL, City of Gainesville, FL, Town of Fort Myers Beach, FL, State of California). Regardless of the approach considered, a focused education and outreach program is recommended to make the messaging clear and consistent.

7.2 ORGANIC MATERIAL DIVERSION

While organics are not typically part of most recycling programs, given the estimated amount of organic waste disposed from the residential and commercial sectors, there is a high potential for landfill diversion (approximately 31%). If such diversion were implemented, it could greatly enhance the Partnership's total diversion rate, and bring it closer to meeting and exceeding the State's 25% diversion goal. Additionally, an organic diversion program would reduce landfilling a valuable soil enhancing resource and reduce the greenhouse gases associated with transportation and landfill disposal. Landfill gas is comprised of roughly 50% methane (CH_4) and 50% carbon dioxide (CO_2). As shown below, the potential for organics recycling for Mobile consists of the following:

- 72,334 tons (19.5%) of food waste

- 5,935 tons (1.6%) of clean wood
- 10,015 tons (2.7%) of yard waste

Currently, yard waste and food waste are not diverted in the Mobile area as a municipal function. Yard trash collected from the City of Mobile is primarily disposed of at a C&D Landfill such as Dirt, Inc., which chips and sells mulch as a commodity. Opportunities for diversion lie in small- and large-scale composting. The Partnership may consider establishing a network of smaller composting sites, often referred to as a decentralized composting network. Decentralized composting networks can reduce the carbon footprint of collection and transportation and can be customized to localized situations without requiring large capital investment in equipment.

Since food waste represents a majority of the organic waste fraction, technical assistance provided to local businesses (including distributors, farmers, food brokers, manufacturers, foodservice operations, retailers, and wholesalers) could help reduce the volume of surplus food generated and direct edible food to a food rescue program offered in the Mobile area. Site assessments can identify and estimate the types and quantities of surplus food that could be directed to people, animals, or livestock, along with an infrastructure necessary to redistribute the food. The Partnership's priority should be to first encourage donation of edible food for consumption by humans before establishment of a composting program. Major food waste generators identified (i.e., grocery stores and restaurants) can be paired with organizations/charities for food donation or local farmers that can use food waste in livestock production. Information on food waste generators and potential donation and reuse opportunities could be listed on the City of Mobile, County, and individual municipality's websites.

After food recovery programs have been implemented, composting infrastructure should be considered. One jurisdiction that has implemented composting from C&D materials in Alabama is Baldwin County. Currently, the county stockpiles and grinds their wood and yard waste. The produced compost is sold back to the citizens at $25/ton. The county also applied for a variance from ADEM that allows them to use a 50/50 dirt wood chip mix as landfill cover for beneficial reuse. After infrastructure has been established to accommodate composting, the development and adoption of a mandatory organic diversion ordinance would further increase diversion quantities.

7.3 CONSTRUCTION AND DEMOLITION DEBRIS

The methodology used to calculate the solid waste tonnage for 2020 involved using EPA's updated 2018 MSW estimated per capita waste generation rate of 4.9 lbs./person/day; equating to approximately 371,000 tons of MSW generated in the Mobile region. However, MSW does not include everything that may be landfilled at the local level, such as C&D and other non-hazardous industrial wastes. Although the majority of EPA analyses focus primarily on MSW, EPA has been including estimates of C&D waste generation in recent years. The total generation of MSW in 2018 was estimated at 600 million tons, which is more than twice the amount of generated MSW.

To increment the diversion of C&D from the landfill, there are a number of policy options that communities can implement such as disposal bans, disposal taxes, sustainable subsidized recycling, a percentage recycling requirement, advanced disposal fee/deposits, mandatory C&D processing, and green building initiatives. Strategies that have been implemented in different states are provided below.

- Vermont passed a Universal Recycling law that bans clean wood disposal (July 1, 2016). The ban encourages separation and collection of clean wood waste at facilities.

- Vermont - Act 175 (January 2015) requires the recycling of architectural material (clean wood, scrap metal, drywall, plywood, oriented strand board) from certain projects if they produce 40 cubic yards or more of architectural waste, are within 20 miles of a solid waste facility that recycles architectural waste, and/or are for a commercial or residential building with 2 or more units.
- Massachusetts has set a 50% diversion goal for C&D materials although the rate has plateaued around 30%; mixed C&D must be processed before disposal in a solid waste facility. As of July 1, 2016, Massachusetts has banned asphalt pavement, brick, concrete, metal, and wood from disposal with the hopes of supporting the development of in-state processing, preserving disposal capacity, and achieving the non-municipal solid waste reduction goal.
- The Los Angeles County Board of Supervisors adopted a C&D recycling and reuse ordinance in 2005, which requires at least 50% of all material generated by C&D projects located in unincorporated areas to be recycled or reused. Since 2017, all projects that generate C&D are to recycle or reuse the material at a minimum rate of 65%. As part of obtaining a building permit, the public works division refers a project to the Environmental Programs Division to obtain approval of a C&D Recycling and Reuse Plan.
- Sarasota County, FL implemented a processor-based C&D recycling program in which a private sector contractor operating the C&D processing site at the county-owned landfill is required to divert at least 50% of C&D delivered to the site. Contractual terms state processing fees and the consequences of not meeting the diversion goals.
- Palm Beach County, FL – The Solid Waste Authority issues permits to several C&D recyclers in the county and has authorization in place with a number of designated facilities outside the county that allow those facilities to receive Palm Beach County C&D for recycling. Most of the C&D in the county is delivered to the permitted recyclers who are required to achieve a minimum 50% recycling rate as a condition of the permit. This program has helped Palm Beach County achieve one of the highest recycling rates in FL.

8.0 COMPARABLE COMMUNITIES

SCS evaluated recycling programs in comparable communities to benchmark comparable project attributes. The comparable communities evaluated were Tallahassee, Leon County, FL and Charleston, Charleston County SC.

Tallahassee, Leon County, FL

The City of Tallahassee's Community Beautification and Waste Management Services department provides weekly curbside recycling services to the residents by managing a contract with Waste Pro. The same services are offered for unincorporated residents of Leon County, outside city limits, via a subscription contracted directly with Waste Pro services. Leon County (unincorporated) also offers compost drop-off sites and four rural Waste Collection Centers where residents can drop off recyclable materials, household hazardous waste, and electronics at no charge. Leon County also sells compost bins to interested residents at a reduced rate of $38. Commercial recycling is contracted through Waste Pro for both the city and county. Waste Pro delivers the residential and commercial recyclables to the Marpan MRF, which also processes C&D and Class III materials as well as yard waste. Table 28 compares general recycling information between Mobile and Leon County and Table 29 provides residential rates for recycling in both Tallahassee and Leon County.

Table 28. Recycling Information Comparison (Mobile vs Leon)

	Partnership (Mobile)	Leon county-wide
MSW Tonnage	345,722 (2022)	297,093 (2020)
Recycling Goal	To Be Determined 25% (State Goal)	75% (County 2020) 75% (State Goal by 2020)
Recycling Rate (Actual)	<1% (2022)	Estimate 63% (2021)
Recycling Tonnage (2022)	2,314	434,683 MSW recycling = 71,348 tons C&D Recycling = 363,335 tons

Table 29. Residential Rates for Recycling

Tallahassee	Leon County
Regular homes $23.62/month (includes pickup for both solid waste and recycling)65-Gallon for Recyclables	Single-family homes $45.09/ 3 months (includes pickup for both solid waste and recycling) 65-Gallon cart for recyclables
Apartment $23.62/month	
Residential Premium Service $54.17/month	

The Marpan MRF processes and markets all program recyclables and C&D material; as well as cooperates with Leon County in the development and implementation of outreach programs intended to increase residential and commercial recycling participation. Two amendments to the original Marpan Agreement were made for a renegotiation of fees, based on Marpan operating at a loss to process recyclable materials as a result of depressed markets, primarily resulting from China's National Sword Policy. Under the new contract, the County's processing fee increased to $115 per ton ($119 per ton is the adjusted cost due to market conditions), but profits obtained through the sale of compostable materials would be distributed on a continuum between Leon County and Marpan. The contract also states that Marpan has the right to reject loads containing 15% or more contamination by volume. A rebate is offered by Marpan to the County and Tallahassee based on the average market value of the processed recyclables. This cost per ton is adjusted at the start of each month using the Southeast USA regional average commodity prices (U.S. Dollars per Ton). Since the County shares in 50% of revenue, this presents a major incentive to keep improving recycling processes and practices. Table 30 provides information on the Marpan MRF.

Table 30. Marpan MRF General Information

Owner and Operator of MRF	MRF Processing Capacity	Leon County Tons Recyclable Material (2022)	Contamination Rate	Cost of MRF	Processing Fee (Cost Per Ton)
Marpan	**1,600 tons/month** through single stream recycling facility **5,000 tons/month** through Class III facility	Approx. Total 434,683 tons	Average 15%	$40,000,000 with additions costing up to $10,000,000	$150 – $120/ton

Charleston, Charleston County, SC

The City of Charleston collects and administers contracts for garbage and trash collection, while Charleston County collects curbside recyclables and manages solid waste disposal for the approximate sixteen incorporated and unincorporated municipalities. All recyclable materials go to the Charleston County owned MRF, which is operated by a 3rd party. Their county-owned and contractor operated compost facility accepts yard and food waste. Under the public-private partnership, Charleston County receives a share of revenue from the compost. Household garbage, bulk waste, and yard waste is not collected by the county, but rather managed by the various municipalities and public services districts. The garbage is delivered to the county landfill or to either one of two transfer stations that send the garbage to Oakridge Landfill in Dorchester County, South Carolina. Table 31 compares general recycling information between Mobile and Charleston County.

Table 31. Recycling Information Comparison (Mobile vs Charleston)

	Partnership (Mobile)	Charleston county-wide
MSW Tonnage (2022)	345,722	398,150
Recycling Goal	To Be Determined	40% (State Goal)
Recycling (Actual)	<1%	20%
Recycling Tonnage (2022)	2,314	105,000 (56% composted materials/44% recyclable material)

In 2020, Charleston County opened an 82,000 square foot MRF, which they own and operate. The facility includes a multimedia education center, administrative offices, and a parking area that accommodates the collections fleet. The MRF processes 25 tons of recyclables per hour and is considered a long-term solution to the County's single-stream recycling program, which received 39,500 tons of material in 2019. Table 32 provides information on the Charleston County MRF.

Table 32. Charleston County MRF General Information

Owner and Operator of MRF	MRF Processing Capacity	Charleston County Tons Recyclable Material (2022)	Contamination Rate Accepted by 3rd Party	Cost
Owned by the County/Operated by a 3rd party (Charleston Recycling Services)	25 tons/hour (8-hr shift/5 days/week with occasional Saturday shifts)	Approx. 45,700 tons	18%	Approximately $30-$40 million

In 1989, Charleston County began charging a Solid Waste User Fee (Fee) to real property owners and certain commercial and government entities. The Fee is the principal funding source for the County's solid waste management programs including recycling. It's applied to individual parcels and divided into residential and commercial categories. The residential Fee is included as part of the annual Real Property Tax Bill and the commercial Fee is billed separately, based on the prior year's volume reported by the hauler. The fee also funds drop off sites and convenience centers, waste transfer and disposal, MRF, composting facility, household hazardous waste, and administration. Table 33 shows the Fee based on sector.

Table 33. Solid Waste Management Program Costs to Residents/Commercial Entities

Single - Family	Multi - Family	Commercial
$99/year *Average residences produce 1.5 tons of garbage per yr. Therefore, the rate is 1.5 x the rate per ton (1.5x$66) = $99	$70/year *Average multi-family units produce 1.05 tons of garbage per yr. Therefore, the rate is 1.05 x the rate per ton (1.05x$66) = $70	$172/cubic yard of garbage *An average cubic yard of garbage weighs 100 lbs. Therefore, $66 (price per ton)/2,000 (lbs. in a ton) x 100 (lbs. in a cubic yard) x 52 weeks = $172

*The Solid Waste Recycling and Disposal Fee of $99 for a single-family residence has remained unchanged since FY 2008.

9.0 FUNDING OPPORTUNITIES (GRANTS)

SWRMMA GRANTS (STATE)

Opportunities to help fund an enhanced recycling program exist in the form of grants. SWRMMA provides funding for local governments and solid waste authorities to introduce or improve recycling through the Alabama Recycling Fund (ARF), which was established in 2009 and has awarded $23 million since its inception. Yearly grant applications submitted by March 1st are reviewed and ranked for funding based on their category (below):

- **Category 1** (greater than 40,000 households) must receive at least 60% of funds
- **Category 2** (less than 40,000 households) must receive at least 20% of funds
- Remaining 20% of funds can be awarded to Category 1 or 2, with no single award being more than 20%

With progression of the program, specific priorities were added such as funds targeted to the actual collection of recyclable commodities versus personnel and other request categories, in addition to placing a priority on grantees which act in partnership. In accordance with recommendations made through the 2016 SERDC recycling study, priority will also be given to future applicants whose focus is on collection infrastructure in support of a hub and spoke model. A hub and spoke model is the creation of a centralized processing facility that collects recyclables from surrounding communities, at no cost to those communities. Annual review of the available funding may lead to additional prioritizations in the future.

ADDITIONAL FUNDING OPPORTUNITIES (FEDERAL AND STATE)

Consumer Electronics Battery Recycling, Reprocessing, and Battery Collection (funded via National Energy Technology Laboratory by BIL funds)

This will provide funding to support the recycling of consumer electronics batteries and battery-containing devices to help build a robust domestic critical material supply chain for EV batteries in the United States. The program will accomplish this by: 1) Increasing participation by consumers in recycling programs; 2) Improving the economics of consumer battery recycling to create a market for recycling, including battery recycling research, development, and demonstration activities to create innovative and practical approaches to increase the reuse and recycling of batteries; and 3) Increasing the number of these programs, including state and local programs to assist in the establishment or enhancement of state consumer electronics battery collection, recycling, and reprocessing programs and to establish collection points at retailers.

Eligible applicants: City or township governments

Closing date: November 29, 2023

Funding: $125,000,000

Climate Smart (funded via National Energy Technology Laboratory by BIL funds)

This program supports comprehensive assessment and strategic planning efforts by organizations to mitigate physical and operational environmental impacts and adapt to a changing climate. Projects will result in climate action and adaptation planning documents or similar detailed assessments including prioritized, measurable actions and their expected outcomes. Proposals must address how

strategic planning for climate change will increase the organization's resilience and support its work in the humanities over the long term. Projects are financed through a combination of federal matching funds and gifts raised from third-party non-federal sources.

Eligible applicants: City or township governments

Closing date: September 14, 2023

Funding: $6,000,000

State Economic and Infrastructure Development (SEID) Grant Program

This program supports comprehensive assessment and strategic planning efforts by organizations to mitigate physical and operational environmental impacts and adapt to a changing climate. Projects will result in climate action and adaptation planning documents or similar detailed assessments including prioritized, measurable actions and their expected outcomes. Proposals must address how strategic planning for climate change will increase the organization's resilience and support its work in the humanities over the long term. Projects are financed through a combination of federal matching funds and gifts raised from third-party non-federal sources.

Eligible applicants: Local governments parts of Alabama, Georgia, Mississippi, North Carolina, South Carolina, and Virginia (Alabama: Autauga, Baldwin, Coffee, Covington, Crenshaw, Dale, Geneva, Henry, Houston, Lee, Mobile, Montgomery County, Pike)

1) Invest in Critical Infrastructure
    - 1.1 Expand basic water and sewer infrastructure to be more resilient
    - 1.2 Expand and improve access to affordable and reliable digital infrastructure
    - 1.3 Support transportation infrastructure systems and transit services
2) Improve Health and Support Services Access and Outcomes
    - 2.1 Support initiatives that expand access to affordable, high-quality healthcare and services that support mental and physical health
    - 2.2 Provide support to build capacity for navigating and accessing services
3) Strengthen Workforce Capacity
    - 3.1 Promote workforce development programs for local, high-demand job opportunities
    - 3.2 Increase enrollment and completion of critical training programs
4) Foster Entrepreneurial and Business Development Activities
    - 4.1 Support the expansion of access to business capital to support innovation, entrepreneurship and economic equity
    - 4.2 Invest in programs and business opportunities that address critical challenges facing communities while attracting and retain talent
5) Expand Affordable Housing Stock and Access
    - 5.1 Increase access to wrap-around services and legal assistance to resolve title, heirship, land tenure and eviction issues
    - 5.2 Support enrollment in and access to homebuyer programs

5.3 Invest in efforts to improve the affordability and availability of quality housing across the region

6) Promote Environmental, Conservation, Preservation, and Access

6.1 Invest in air, water and soil clean-up efforts that impact historically disadvantaged communities

6.2 Preserve and expand access to natural resources to increase outdoor recreation and tourism opportunities

Closing date: September 15, 2023

Funding: $20,000,000

ADDITIONAL FUNDING OPPORTUNITIES (PRIVATE)

Alabama Power – Education Foundation Grant
https://powerofgood.com/environmental-stewardship/

The project addresses a need in Environmental Stewardship:

- Community gardens
- Aquatic gardens
- Urban forestry programs
- Environmental education
- Recycling/reuse programs
- River/watershed environmental programs

Eligible applicants: Government Entity or Public Charity with tax-exempt status under Section 501(c)(3)

Closing date: October 6, 2023 (new funding each quarter, rolling calendar)

10.0 CONCLUSIONS

The City of Mobile's recycling program is a well-organized drop-off operation that relies on contracts with a private hauler and a ECUA's MRF located in Escambia County, Florida. When the ECUA MRF is unavailable, recyclable materials are transported to a Republic MRF, located approximately 145 miles from Mobile, at a significantly higher fee for processing and hauling. Although the ECUA MRF has historically offered low processing fees, the fees will increase significantly beginning in October 1, 2023. Sending recyclable materials to the ECUA MRF will cost the City of Mobile approximately $131 per ton.

With the proposed Baldwin County MRF and Bay Minette Transfer Station expected to be commissioned by March 21, 2024, the City of Mobile will have the option to transport recyclable materials to Baldwin County at a lower cost of $101/ton. It should be noted that the cost of $101/ton was calculated with the assumption that the City of Mobile will continue to pay similar transportation rates as being charged in existing agreements. The processing fee at the Baldwin MRF has been estimated at $30/ton or $45/ton if transported to the Bay Minette Transfer Station.

In order to reach or exceed the state's goal of 25% landfill diversion, the City of Mobile (and Partnership) is interested in increasing recycling through curbside collection. Costs to implement curbside recycling within the City of Mobile were evaluated by considering an incremental approach, starting at a 10% recycling rate and eventually increasing to the target rate of 25%. A recycling rate of 10% or recycling 16,730 tons of material equates to a cost of $17/month per household to send the recyclable materials to the Baldwin County MRF. The cost per ton to send the recyclable materials to the Baldwin County MRF or Bay Minette Transfer Station also equates to $803/ton and $813/ton, respectively.

Recycling 25% of the City of Mobile's waste stream equates to a cost of $19/month per household or a cost of $352/ton if sent to the Baldwin County MRF and a cost of $362/ton if sent to the Bay Minette Transfer Station. Factors included in the cost analysis for both recycling rates were collection, transfer station operations, transportation, and processing costs. The Baldwin County MRF is anticipating a throughput capacity of at least 10,000 tons, leaving Mobile with a remaining processing need of approximately 30,000 tons. At a 25% recycling rate for Mobile, the capacity at the Baldwin County MRF may not be sufficient.

The Partnership also has an opportunity to meet or exceed the state's 25% diversion goal by together providing their communities with curbside recycling. With the increased tonnage, transportation and processing costs would be more cost effective. For a curbside collection option, the costs of collection, transportation operations, transportation, and processing were included in this evaluation. Recycling 92,750 tons annually (25% landfill diversion) by transporting the recyclable materials to the Baldwin County MRF or Bay Minette Transfer Station equates to a cost of $18 to $19/month per household or $375 to $384/ton. As mentioned in the paragraph above, the capacity at the Baldwin County MRF may not be sufficient to support the expected quantities of materials. With limited capacity at the Baldwin County and ECUA MRF, other receiving facilities may need to be considered in the long term including the investment of a Mobile based MRF, or securing a long-term agreement for a private MRF owner-operator to invest in a local MRF.

The transportation and processing costs would be minimized by having a MRF sited within the Mobile area. To construct a MRF with needed capacity, the facility would cost between $10 to $20 million, resulting in a unit cost of $326 to $335 per ton or $16/month per household; making it a more attractive cost option than sending the recyclables to the Baldwin County or Republic MRF.

The last option considered is developing additional recycling drop-off facilities at locations convenient to the residents. To increase recycling collections, it's important to site a location with highest population density. It is also important to make recycling feasible for rural residents and consideration should also be placed in those areas. Costs for this option are similar to the costs provided in 'Status Quo'. Monitoring contamination at existing sites has been successful, making the recyclables considerably more attractive for sale as commodities.

Table 34 presents the annual tons, cost per month per household, and recycling program unit costs ($/ton) for the options described above. The costs presented include collection, transfer station operations, transportation, processing, and/or amortization of capital costs (where applicable).

Table 34. Cost for Transportation and Processing for Recycling Options

Option	Annual Tons	Approximate Cost/Month Per Household	Approximate Cost Per Ton
1A. Status Quo (County)[A]	1,402	N/A	$ 136
1A. Status Quo (City of Mobile)[A]	911	N/A	$ 131
1B. Transport to the Baldwin MRF (City of Mobile)[B]	911	N/A	$ 101
1B. Transport to the Bay Minette Transfer Station (City of Mobile)[B]	911	N/A	$ 101
2A. Curbside Collection and Transport Recyclables to the Baldwin MRF at a Recycling Rate of 10% (City of Mobile) [C]	18,425	$ 17	$ 787
2A. Curbside Collection and Transport Recyclables to a new Transfer Station at a Recycling Rate of 10% (City of Mobile)[C]	18,425	$ 17	$ 797
2B. Curbside Collection and Transport Recyclables to the Baldwin MRF at a Recycling Rate of 25% (City of Mobile)[C]	46,000	$ 19	$ 348
2B. Curbside Collection and Transport Recyclables to a new Transfer Station at a Recycling Rate of 25% (City of Mobile)[C]	46,000	$ 19	$ 357
3A. Curbside Collection and Transport Recyclables to the Baldwin MRF at a Recycling Rate of 25% (Partnership)[D]	92,750	$ 18	$ 375
3B. Curbside Collection and Transport Recyclables to a new Transfer Station at a Recycling Rate of 25% (Partnership)[D]	92,750	$ 19	$ 384
4A. Curbside Collection including Development of a $10 Million MRF at a Recycle Rate of 25% (Partnership)[E]	92,750	$ 16	$ 326
4B. Curbside Collection including Development of a $20 Million MRF at a Recycle Rate of 25% (Partnership)[E]	92,750	$ 16	$ 335
5. Expand Drop-off Opportunities	See Status Quo above		

A. The City of Mobile's cost per ton rate includes transportation and processing to the ECUA MRF; the City's operations and maintenance costs were not included. The County's costs were calculated by subtracting the excess of revenue over expenditures (operations and maintenance).
B. Option 1B includes the transportation and processing costs to transport the City of Mobile's current recyclable materials to the Baldwin County MRF or Bay Minette Transfer Station.
C. Option 2 includes the collection, transfer station operations, transportation, and processing costs to transport10% (Option 2A) and 25% (Option 2B) of the City of Mobile's recyclable materials to the Baldwin MRF or Bay Minette Transfer Station.
D. Option 3 includes the collection, transfer station operations, transportation, and processing costs to transport 25% of the Partnership's recyclable materials to the Baldwin MRF or Bay Minette Transfer Station.
E. Option 4 includes the collection and processing costs to develop a MRF within Mobile County.

11.0 RECOMMENDATIONS

It is recommended that the City of Mobile take on a leadership role with the Partnership to advance recycling efforts within the region. The Partnership working together can achieve economies of scale can reduce the cost for managing recyclable materials. Regardless of the option selected, it will require a couple of years and new infrastructure and/or services to advance from the current recycling rate of 1% to the ADEM established goal of 25%.

It is recommended in the short term (i.e., 1 to 2 years) that the Partnership first consider expanding its network of drop-off facilities (Option #5) while continuing to deliver recyclable materials to the ECUA MRF (Option #1A). This approach represents an expansion of the existing system and will allow the Partnership to implement the key concepts detailed above, which should increase the quality and tonnage of recyclable materials collected. Once the Baldwin County MRF commences operation, and assuming the Partnership can secure an attractive processing agreement with Baldwin County, it is recommended that the Partnership transport recyclable materials (Option #1B) to the Baldwin County MRF as an alternative to the ECUA MRF.

The recyclable quantities currently generated from the Partnership do not warrant large capital investments in infrastructure such as a transfer station or a MRF. The recommendation is to increase recyclable materials quantities to volumes to the level it is economically more attractive to investment in both a transfer station and/or a MRF. The recycling material quantities needed to achieve economies of scale and attract a private owner-operator to develop a MRF (i.e. a $10 to $20M infrastructure investment) specifically for recycling is likely closer to the 15 to 20% Partnership recycling rate, and is highly dependent on future market factors and financial climate. In the near term, opportunities exist to contract with private solid waste haulers that already own and operate transfer stations that may have the capacity and ability to handle recyclable materials for the purposes of more efficiently transporting materials to a nearby MRF.

Implementing curbside residential recycling presents opportunities as well as challenges. Accordingly, an incremental approach is recommended to advance from the status quo to a program that can meet or exceed Alabama's 25% recycling goal. This approach will promote stability in terms of program quality and funding committed, which will inform staff and elected leaders whether to develop an Mobile area MRF or to continue to transfer recyclable materials to an out-of-County MRF.

The Partnership will need to begin planning now for implementation of curbside collection, set interim recycling targets, solicit collection bids from private hauling companies and pro-actively facilitate education and outreach activities, as well as monitoring progress and performance.

The following are some key concepts to consider that are applicable to and has proven to increase the likelihood of successful recycling services, programs, and facilities:

- Keep It Simple – recycling should be easy for the customer as increasing participation will increase recycling volumes.
- Invest in Education and Outreach – effective communication, in terms of messaging and impact, will help customers understand the recycling program and their role in supporting its success, including the cost impact of contamination.
- Implement an Enterprise Model – an industry best practice is to align the cost of service with services received where all solid waste management services are managed as a self-sustaining cost center in lieu of embedding waste and recycling services in the ad-valorem tax bill.
- Participate and partner with both governmental and non-governmental groups (programs) such as offered by EPA, ADEM, The Recycling Coalition, and The Recycling Partnership for both funding and education opportunities, as well as current trends, technology improvement, and lessons learned from other communities.
- Include and promote commercial and industrial recycling participation – Businesses and industry participation in "pay as you throw" recycling programs will boost volumes and provide consistent quality of materials as well as minimize transportation impacts. Most businesses are willing to pay for recycling services through subscriptions or license fees.
- Account for all landfill diversion activities – Construction and demolition (C&D) debris from the City of Mobile residents is collected by the City and transported to C&D landfills, which separate some materials such as organics and other materials for recycling that are not currently accounted for and can boost the Partnership's landfill diversion rates. Other programs may exist such as composting and other recycling programs that should be tracked by the Partnership going forward.

Appendix A

Public Community Meeting Minutes

MEETING MINUTES – Bayou La Batre

Subject	Comments
CATEGORY:	Recycling Feasibility Study - Public Meetings (SCS Project No. 09223005.00)
SUBJECT:	Bayou La Batre Public Meeting - Mobile County-Wide Recycling Feasibility Study
PURPOSE:	Public Engagement Meetings Date: **05/23/23** Time: **1:00-2:00 pm** (local time) Location: 12745 Padgett Switch Road, Irvington, Alabama
ORGANIZER:	Meeting Leaders: Ramona/Daniel/Steve/Casi/Maitland- Engage Public at Poster Stations, Facilitate Interactions, and Solicit Public Comments and Response
DOCUMENTS:	4 Engagement Posters on Display, PowerPoint Presentation to Facilitate Discussion
COMMENTS:	**Attendees:** Feasibility Study Representatives: Maitland Thull, Steve Stewart, Daniel Dietch, Ramona Hill, Casi Callaway, Matthew Jones, Angela Davidson Public attendees: Sign-in Sheet Attached **Meeting Minutes:** **1:00-1:30 – Poster Meet and Greet** Attendees were encouraged to walk around the room visiting the 4 main poster displays and engage with representatives stationed at each poster including: Steve Stewart, Ramona Hill, Casi Callaway, Maitland Thull and Daniel Dietch. Poster 4 included an interactive "vote" related to the importance of recycling, willingness to travel to drop-off locations, and others – see attached results table. **1:30 – Begin Introductions – Ramona Hill** Ramona introduced members of the SCS Team as well as Casi Callaway with the City of Mobile. Casi gave a brief background on the reason for the public meeting and background of how the feasibility study came to be with ADEM grant money. Casi then introduced Matthew Jones with Mobile County, and Matthew spoke a few minutes to introduce himself and the county's involvement in the study. Ramona then opened the floor for questions giving guidance for a 2-3-minute per question period.

Subject	Comments	
	Jimmy Lyons addressed questions about the end of market viability for recycling. Daniel Dietch responded with an explanation of the overall waste stream components, and the shifting of commodity markets and their impact on municipal recycling programs and partners. Nina Holladay asked questions concerning the cost of curbside recycling and wanted to know when new recycling centers would be available. Daniel Dietch responded to the question explaining that this was the beginning stages of the feasibility study and that it would take time to explore the opportunities available and determine the next steps. A question was also brought up about mulching and whether or not the county had a recycling option for yard debris. Response from Casi Callaway that mulching was not currently offered by the City, but there had been some interest and discussion about offering such services. Nina Holladay also asked a question about the current recycling amounts/figures for the city and the county. Casi Callaway responded that she did not have figures for the County but that the City of Mobile currently spends far more per ton on recycling than on garbage brought to the landfill due to the high cost of transport of recyclable materials. She further explained that when the ECUA MRF is open, recyclables are transported to Pensacola; however, they are currently closed and recyclables are being transported all the way to a Baton Rouge, Louisiana MRF. All attendees were encouraged to complete the online survey. **2:00 p.m. – Conclusions - Ramona Hill**	

Poster #4 Interactive Question Results

How Important is Curbside Recycling to You?	Somewhat	Important	Very Important
Bayou LaBatre	1	0	8
Connie Hudson		2	15
Saraland	1	1	6
Does Recycling contribute to a sense of stronger community and neighborhood	**YES**	**NO**	
Bayou LaBatre	8	0	
Connie Hudson	16	0	
Saraland	8		
How far are you willing to drive to a recycling drop off facility?	**5 miles**	**10 miles**	
Bayou LaBatre	1	7	
Connie Hudson	10	7	
Saraland	3	4	
Would you like the convenience of a recycling center (i.e., drop off) or curbside collection?	**Drop Off location**	**Curbside Collection**	
Bayou LaBatre	5	5	
Connie Hudson	2	15	
Saraland	1	7	

Mobile County-wide Recycling Feasibility Study
Public Meeting – Bayou La Batre

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Angela Davidson	SCS	
Steve Stewart	↓	
David Dietel		

Mobile County-wide Recycling Feasibility Study
Public Meeting – Bayou La Batre

Name	Email	Zip code
Casi Callaway	City of Mobile	
Maitland Twil	↓	
Ramona Hill	Workshops Etc !	

MEETING MINUTES – Connie Hudson Senior Center

Subject	Comments
CATEGORY:	Recycling Feasibility Study - Public Meetings (SCS Project No. 09223005.00)
SUBJECT:	Connie Hudson Senior Center Public Meeting - Mobile County-Wide Recycling Feasibility Study
PURPOSE:	Public Engagement Meetings Date: **05/23/23** Time: **6:00-7:00 PM** (local time) Location: 3201 Hillcrest Road, Mobile, AL
ORGANIZER:	Meeting Leaders: Ramona/Daniel/Steve/Casi/Maitland- Engage Public at Poster Stations, Facilitate Interactions, and Solicit Public Comments and Response
DOCUMENTS:	4 Engagement Posters on Display, PowerPoint Presentation to Facilitate Discussion
COMMENTS:	**Attendees:** Study Representatives/Leaders: Maitland Thull, Steve Stewart, Daniel Dietch, Ramona Hill, Casi Callaway, Sharee Broussard, Angela Davidson Public Attendees: Sign-in Sheet Attached **Meeting Minutes:** **6:00-6:30 – Poster Meet and Greet** Attendees were encouraged to walk around the room visiting the 4 main poster displays and engage with representatives stationed at each poster including: Steve Stewart, Casi Callaway, Ramona Hill, Maitland Thull and Daniel Dietch. Poster 4 included an interactive "vote" related to the importance of recycling, willingness to travel to drop-off locations, and others – see attached results table. **6:30 – Begin Introductions – Ramona Hill** Ramona introduced members of the SCS Team as well as Casi Calloway with the City of Mobile. Casi gave a brief background on the reason for the public meeting and background of how the feasibility study came to be with ADEM grant money. Casi then introduced Sharee Broussard with Mobile County, and she spoke a few minutes to introduce herself and the County's involvement.

Subject	Comments	
	Casi stated that the community has expressed lack of knowledge regarding where the recycling centers are located. They also said that more recycling locations are needed and that they recycle only when it is convenient. What must be done before addressing this situation? 1) A Feasibility study which will consider different strategies to implement regarding recycling strategies and techniques that the community is willing to adopt. 2) Educational campaigns to create a recycling culture, make people aware of what gets recycled and why. Benefits of recycling. 3) The incorporation of a third drop-off recycling location in Mobile is in the planning stages. Ramona then opened the floor for questions giving guidance for a 2-3-minute per question period. Questions/Discussions included the following: - Involvement of county commissioners in recycling activities There should be incentives for people that recycle. They should implement a strategy where people get incentives for collecting cans/bottles and taking them to recycling sites. Grocery stores should eliminate plastic bags for good. Can the local government be more involved in recycling activities? Alabama legislative agenda. - Recycling should be sold as a product. Promote recycling practices. - Small businesses owners complain about not being able to recycle properly. The city's recycling facility does not take recyclables from businesses currently. What requirements must be met for small businesses to have a suitable recycling facility? Some people propose creating a recycling scheme that would enable local businesses to drop off their recycled goods. They also describe how difficult it is for them to carry their goods to a location that will accept them, how much time it takes, and how	

Subject	Comments	
	uncomfortable it is to squeeze them in a small or regular-size vehicle. Trailers downtown for recycling/ drop off alternatives. - Recycling is not new; it is just hard. - Curbside recycling should be as easy as possible. It should not be only about dropping items off and leaving. There should be a community aspect added to it/ Social interaction. Involve the community/ build resilience. - There are 2 city recycling centers and 1 within the county. How much of these actually self-sustain? How much does the county pay to support county recycling centers? - There are some subscriptions that people can pay monthly (about $24/month) where you make a contract with someone that picks up recyclable items from home. - Is there a timeline for the curbside pickup to be ready? Answer/ Depends on the contract/evolution of the project. - Opt-in program for recycling/ incentives for people doing it. - Existence of surveys, a broad statistical analysis. All attendees were encouraged to complete the online survey. **7:00 p.m. – Conclusions - Ramona Hill**	

Poster #4 Interactive Question Results

How Important is Curbside Recycling to You?	Somewhat	Important	Very Important
Bayou LaBatre	1	0	8
Connie Hudson		2	15
Saraland	1	1	6
Does Recycling contribute to a sense of stronger community and neighborhood	**YES**	**NO**	
Bayou LaBatre	8	0	
Connie Hudson	16	0	
Saraland	8		
How far are you willing to drive to a recycling drop off facility?	**5 miles**	**10 miles**	
Bayou LaBatre	1	7	
Connie Hudson	10	7	
Saraland	3	4	
Would you like the convenience of a recycling center (i.e., drop off) or curbside collection?	**Drop Off location**	**Curbside Collection**	
Bayou LaBatre	5	5	
Connie Hudson	2	15	
Saraland	1	7	

Mobile County-wide Recycling Feasibility Study
Public Meeting – Connie Hudson Senior Center

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Mobile County-wide Recycling Feasibility Study
Public Meeting – Connie Hudson Senior Center

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Mobile County-wide Recycling Feasibility Study
Public Meeting – Connie Hudson Senior Center

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David Nelson	nelsonds@gmail.com	36606
Sharee Broussard	sharee.broussard@mobilecountyal.gov	36604
Kim Callaghan	kacallaghan@live.com	36606
Angela Davidson	SCS	
Steve Stewart		
Daniel Dietch		
Chad Hughes		
Natalia Marquez		

Mobile County-wide Recycling Feasibility Study
Public Meeting – Connie Hudson Senior Center

Casi Callaway	City of Mobile	
Maitland Thrll	↓	
Ramona Hill	Workshops Etc!	

MOBILE ALABAMA

MEETING MINUTES – Saraland

Subject	Comments
CATEGORY:	Recycling Feasibility Study - Public Meetings (SCS Project No. 09223005.00)
SUBJECT:	Saraland Civic Center Public Meeting - Mobile County-Wide Recycling Feasibility Study
PURPOSE:	Public Engagement Meetings Date: **05/23/23** Time: **1:00-2:00 PM local time** Location: 718 Mae Street, Saraland, Alabama
ORGANIZER:	Meeting Leaders: Ramona/Daniel/Steve /Maitland- Engage Public at Poster Stations, Facilitate Interactions, and Solicit Public Comments and Response
DOCUMENTS:	4 Engagement Posters on Display, PowerPoint Presentation to Facilitate Discussion
COMMENTS:	**Attendees:** Maitland Thull, Steve Stewart, Daniel Dietch, Ramona Hill, Angela Davidson Public Attendees: Sign-in Sheet Attached *Notes: The Civic Center roof was being replaced; attendance may have been affected* **Meeting Minutes:** **1:00-1:30 – Poster Meet and Greet** Attendees were encouraged to walk around the room visiting the 4 main poster displays and engage with representatives stationed at each poster including: Steve Stewart, Ramona Hill, Maitland Thull and Daniel Dietch. Poster 4 included an interactive "vote" related to the importance of recycling, willingness to travel to drop-off locations, and others – see attached results table. **1:30 – Begin Introductions – Ramona Hill** Ramona introduced members of the SCS Team as well as Maitland with the City of Mobile. Maitland provided a brief background on the reason for the public meeting and background of how the feasibility study was being funded with an ADEM grant.

Subject	Comments	
	Ramona then opened the floor for questions and provided guidance for a 2-3-minute per question period. Questions/Discussions included the following: Rick – Streams of Recycling – Where are the markets and what does the revenue component look like? Steve responded from the circular economy standpoint with supply chain and market demands. He mentioned Kimberly Clark, local plastic manufacturers and opportunities for greater participation and greater tonnage to achieve the end goal of more attractive opportunities. Rick asked a follow up question – Is yard waste counted? Steve responded that at least for the City of Mobile, yard waste is currently transported to a C&D Facility and is not credited as recycling. Discussion then centered around waste stream components. Chris McFarland - How are we going to roll out recycling to industry? Our company's goal is to be carbon neutral but it is a challenge with the current market. Chris mentioned that employee buy in for industry recycling will spill over to residential areas. Daniel responded to his question on industry recycling and talked about economies of scale. Gene Rader mentioned that there used to be a MRF located at Brookley that industry used for recycling efforts – although they didn't take glass or Styrofoam. He also talked about Partners for Environmental Progress (PEP) and that industry is very supportive of recycling and that each has environmental goals they are trying to obtain. Ed and Diana Kane expressed the need for advertisements and TV outlets to educate and reach the average person about recycling efforts. Maitland responded that the next step is an Education program and the goal is to inform and educate the public about the current recycling centers and educate them on future efforts.	

Subject	Comments	
	Ron Mitchell made a statement about joining Keep Saraland Beautiful to stay informed and updated about local recycling efforts. All attendees were encouraged to complete the online survey. **2:00 p.m. – Conclusions - Ramona Hill**	

Poster #4 Interactive Question Results

How Important is Curbside Recycling to You?	Somewhat	Important	Very Important
Bayou LaBatre	1	0	8
Connie Hudson		2	15
Saraland	1	1	6
Does Recycling contribute to a sense of stronger community and neighborhood	**YES**	**NO**	
Bayou LaBatre	8	0	
Connie Hudson	16	0	
Saraland	8		
How far are you willing to drive to a recycling drop off facility?	**5 miles**	**10 miles**	
Bayou LaBatre	1	7	
Connie Hudson	10	7	
Saraland	3	4	
Would you like the convenience of a recycling center (i.e., drop off) or curbside collection?	**Drop Off location**	**Curbside Collection**	
Bayou LaBatre	5	5	
Connie Hudson	2	15	
Saraland	1	7	

Mobile County-wide Recycling Feasibility Study
Public Meeting – Saraland Civic Center

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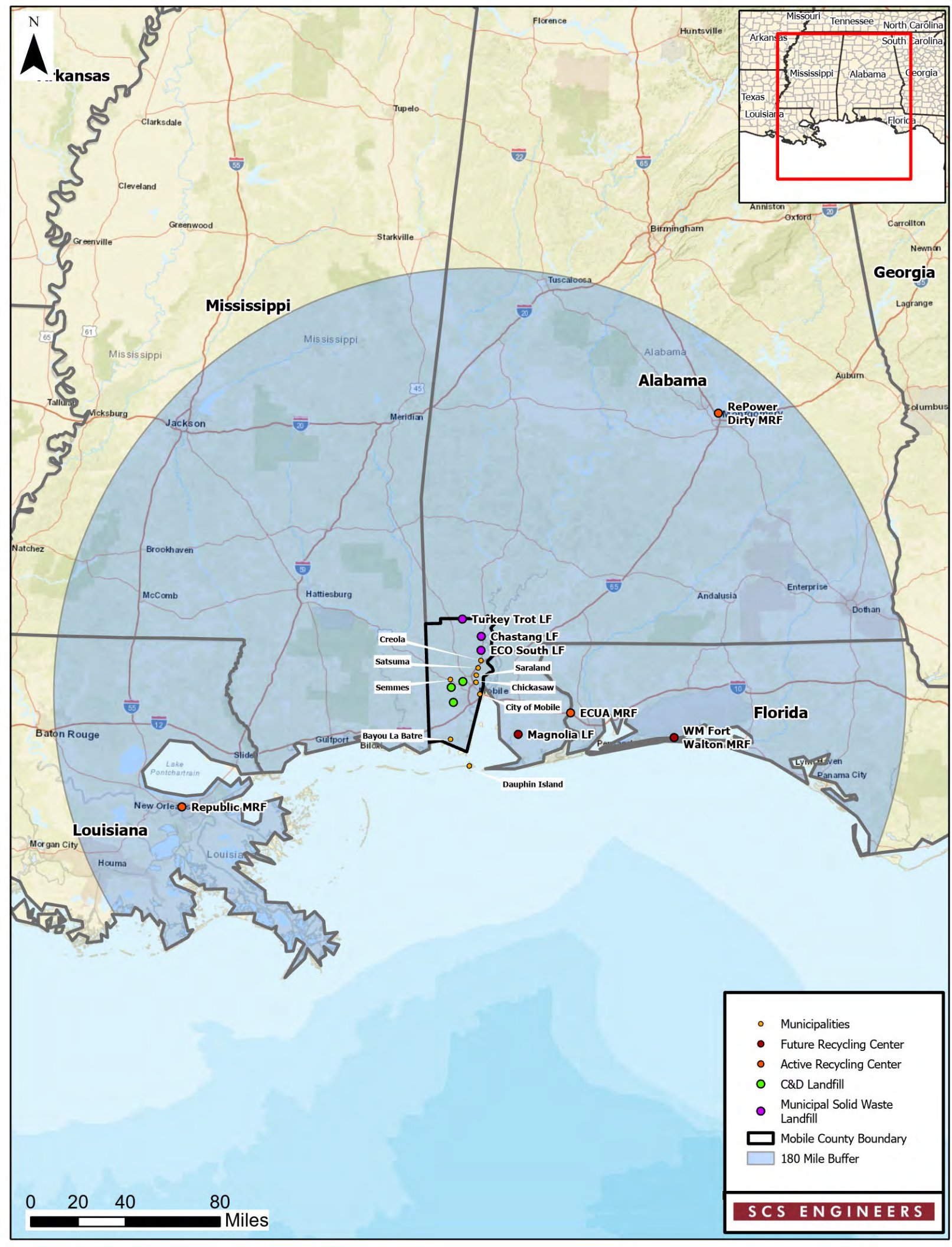
Appendix B

Regional Processing Facilities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Missouri
Tennessee
North Carolina
Arkansas
South Carolina
Mississippi
Alabama
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Texas
Louisiana
Florida
Florence
Huntsville
Tupelo
Clarksdale
Cleveland
Greenwood
Greenville
Starkville
Anniston
Oxford
Birmingham
Carrollton
Newnan
Georgia
Lagrange
Tuscaloosa
Mississippi
Alabama
Auburn
Columbus
Tallulah
Vicksburg
Jackson
Meridian
RePower
Dirty MRF
Natchez
Brookhaven
McComb
Hattiesburg
Andalusia
Enterprise
Dothan
Turkey Trot LF
Chastang LF
ECO South LF
Creola
Satsuma
Saraland
Semmes
Chickasaw
City of Mobile
ECUA MRF
Florida
Baton Rouge
Gulfport
Bayou La Batre
Biloxi
Magnolia LF
WM Fort
Walton MRF
Slidell
Lake Pontchartrain
Panama City
Dauphin Island
New Orleans
Republic MRF
Louisiana
Morgan City
Houma
Municipalities
Future Recycling Center
Active Recycling Center
C&D Landfill
Municipal Solid Waste Landfill
Mobile County Boundary
180 Mile Buffer
0 20 40 80
Miles
SCS ENGINEERS