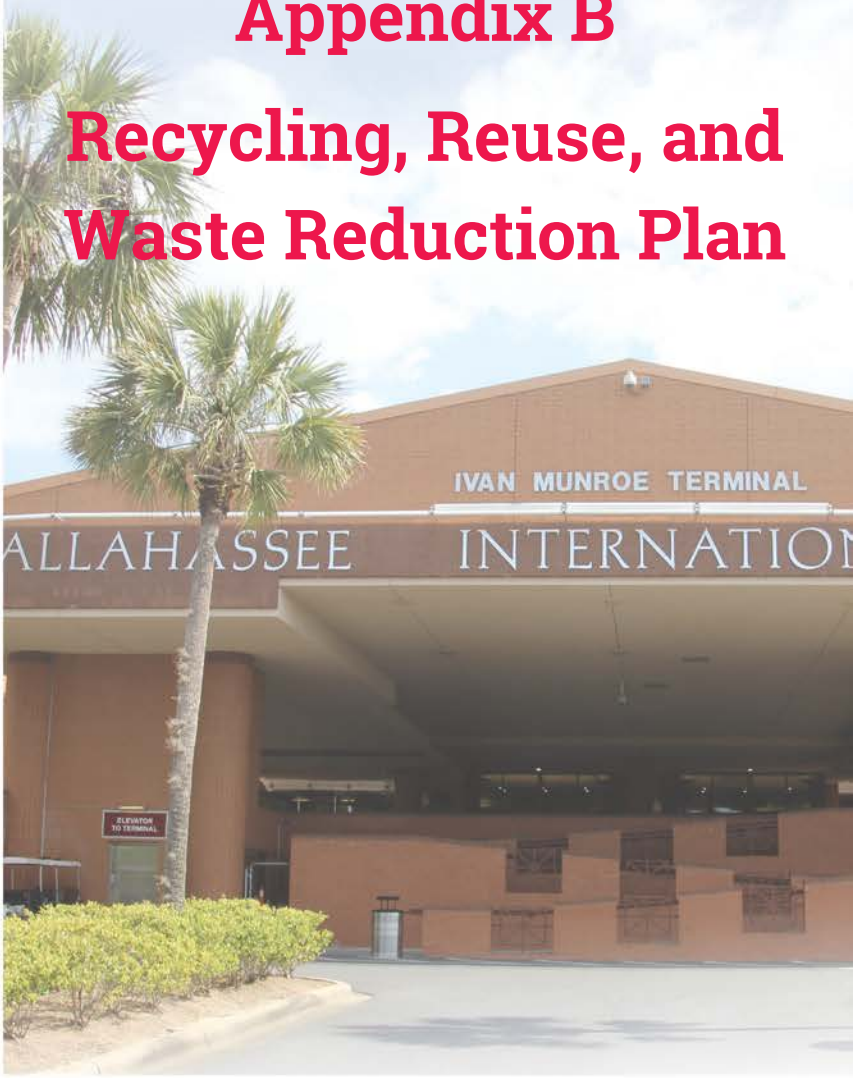




# **Appendix B**

## **Recycling, Reuse, and Waste Reduction Plan**



### **Master Plan Update**



**TALLAHASSEE**  
INTERNATIONAL AIRPORT



## *Recycling, Reuse, and Waste Reduction Plan*

The Tallahassee International Airport (TLH) Master Plan Update includes this Recycling, Reuse and Waste Reduction Plan (3R Plan)



as an appendix to meet requirements of Sections 132(b) and 133 of the Federal Aviation Administration (FAA) Modernization and Reform Act (FRMA) of 2012. The 3R Plan is limited to solid waste and other materials that can be disposed of in a State permitted solid waste facility or landfill such as municipal solid waste, construction and demolition debris, compostable waste, and deplaned waste. This

plan will not address hazardous waste, universal waste, industrial waste, or deplaned waste from international flights. Deplaned waste from international flights must be processed separately due to United States Department of Agriculture regulations regarding international waste.<sup>1</sup> The 3R Plan is consistent with *FAA Guidance on Airport Recycling, Reuse, and Waste Reduction Plans*<sup>2</sup> and Environmental Protection Agency (EPA)'s *Developing and Implementing an Airport Recycling Program*. The 3R Plan consists of the following:

- Facility description and background;
- Waste audit
- Recycling feasibility review;
- Operation and maintenance requirements;
- Review of waste management contracts;
- Potential for cost savings or the generation of revenue; and
- Plan to minimize solid waste generation.

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<sup>1</sup> United States Department of Agriculture, *Manual for Agricultural Clearance*, 2012

<sup>2</sup> FAA Guidance on Airport Recycling, Reuse, and Waste Reduction Plans.

<https://www.faa.gov/airports/environmental/media/airport-recycling-reuse-waste-reduction-plans-guidance.pdf>



The objective of this Appendix is to review TLH’s current recycling program and provide guidance on improving recycling initiatives including reducing waste generated and reuse of materials at TLH.

## 1.1 Facility Description and Background

### 1.1.1 Airport Background -

TLH located in Leon County at 3300 Capital Circle Southwest, approximately six miles southwest of the center of the City of Tallahassee. TLH is owned and operated by the City of Tallahassee (City) and its property encompasses approximately 2,490 acres. Figure 1-2 of the *Master Plan Update* illustrates the general location and vicinity of TLH in relation to the State of Florida.

TLH is classified as a Non-Hub Commercial Service airport, which is a facility that is not a major base for an airline. TLH is a Part 139 Class I airport, serving all types of scheduled operations for air carrier aircraft that serve at least 31 passengers. TLH’s existing facilities include two runways (RW):

- RW 18-36, which is 7,000 feet long and 150 feet wide, and
- RW 9-27, which is 8,000 feet long and 150 feet wide.

Aircraft operations at TLH range from general aviation activities to air carrier operations with airline services being provided by American Airlines, Delta Air Lines, and Silver Airways. **Table 1.1** depicts the annual aircraft operations at TLH from 2012 to 2015 by their respective operator categories.

Year	General Aviation	Military	Air Taxi	Air Carrier	Other*	Total
<b>2012</b>	23,318	9,878	16,062	3,072	11,474	<b>63,804</b>
<b>2013</b>	23,051	12,121	14,493	2,832	10,511	<b>63,008</b>
<b>2014</b>	22,196	9,744	11,081	4,601	8,492	<b>56,114</b>
<b>2015</b>	22,197	10,151	10,123	5,339	10,111	<b>57,921</b>

Source: Air Traffic Activity System (ATADS), created on Mon May 16 15:19:01 EDT 2016  
\* = Local flights as in operations performed by aircraft that remain in the local traffic pattern

The airline activity at TLH is composed of scheduled operations by American Airlines, Delta Air Lines, and Silver Airways, as well as unscheduled airline activity transporting athletic teams for the local universities and visiting teams. For a Primary Commercial Service Airport such as TLH, the FAA distributes annual Airport Improvement Program (AIP) entitlement funding based on the number of passenger enplanements or the number of departing passengers.

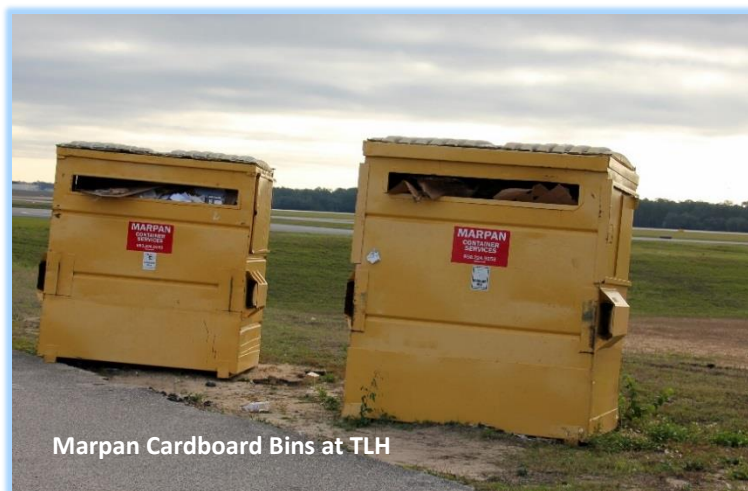
Further information on the background or aviation forecasts for TLH can be found in **Chapter 1** and **Chapter 2** respectively of the *Master Plan Update*.

### 1.1.2 Existing Recycling Program/Efforts –

Currently there is a small-scale recycling initiative in effect at TLH. This includes a small recycled material drop off area underneath the terminal where custodial workers bring aluminum, plastic, or glass. The four containers, two for glass and two for plastic and aluminum cans, are emptied once a week by City waste management.



Once the containers are emptied the City transports the contents to the Marpan Recycling facility in Tallahassee, Florida for processing






Marpan Cardboard Bins at TLH

In addition to the under terminal single stream recycling bins, TLH has two Marpan eight cubic yard recycling containers for corrugated cardboard located by TLH's lavatory dump station (**Figure 1-1**). These two recycling containers are emptied by the City on a weekly basis, and taken





Source: Michael Baker International 2016.

-  Recycling Collection Areas
-  Trash Compactor
-  Airport Property

WASTE FACILITIES LOCATION MAP  
*Tallahassee International Airport 3R Plan*



FIGURE  
1-1



to Marpan for processing. However, the contents of these containers are collected by a separate pick up and are not lumped in with the other recyclables. Some tenants also recycle aluminum and plastic on a voluntary basis. TLH is making the conscious effort to establish and implement a 3R plan to become a more green and sustainable airport.

### 1.1.3 Current Waste Management Program –



The current Waste Management program at TLH consists of waste collection that is dumped in centralized locations for pick up. These locations consist of an area below the terminal and collection dumpsters outside the terminal security fence in front of the HVAC cooling towers, as shown in **Figure 1-1**. The City of Tallahassee handles the waste management hauling at TLH. The waste

collection area underneath the terminal contains a grease trap, trash compactor, and the previously described recycling containers. The trash compactor is 30 cubic yards and is emptied by the City every other week, unless otherwise directed by TLH. The contents of the compactor and dumpsters outside the AOA are taken to a local transfer station or landfill to be dumped.



A waste characterization was conducted in November 2016. Waste was characterized from the trash compactor underneath the terminal and the dumpsters located just outside the security identification display area fence. **Table 1.2** contains the findings of the waste characterization including the amounts of non-recyclable and recyclable material, as well as a breakdown of the recyclable goods into plastic, paper, aluminum and glass.

<b>Table 1.2 2016 Waste Characterization</b>		
Terminal Compactor		
	Recyclable: 40 percent	Non-Recyclables: 60%
Plastic	15 percent	
Paper	20 percent	
Aluminum	4 percent	
Glass	1 percent	
Terminal Dumpsters		
	Recyclable: 25 percent	Non-Recyclables: 75%
Plastic	10 percent	
Paper	5.5 percent	
Aluminum	9.5 percent	
Glass	-	



Representative photo of trash compactor waste characterization

The waste characterization results show the percent of recyclables found in the single stream solid waste containers being taken to solid waste landfill facilities. To reduce this baseline amount TLH is increasing its recycling efforts, as detailed in **Section 1.7** of this report.

*State Statute*

Fla. Stat. § 403.7032 (2013) – Defines state expectations in addition to setting forth initiatives that should be adopted by state and local government agencies. Also offers recognition to private businesses who voluntarily take on recycling initiatives. By the year 2020 Florida should recycle 75 percent of the solid waste the state produces.

*Permit Requirements*

TLH is considered an Exempt Generator of recovered materials and therefore is exempt from acquiring certification to handle or collect recovered materials<sup>3</sup>. In 2009, Marpan and Leon County formed a Public-Private Partnership that redirected all residential curbside dual-stream recyclable waste bound for the Leon County Landfill to Marpan for sorting. Marpan is a certified recovered materials processing facility and has a current 67 percent recycling rate for all MSW sorted at the facility.

<sup>3</sup> Fla. Stat. § 62-722.200(5) (2013)

### 1.1.3 Drivers for implementing/maintaining a recycling program –



The City launched Green Print which is a broad, inclusive, and community –responsive strategic sustainability plan developed to advance the City’s goal of creating a more sustainable and livable community.<sup>4</sup> The 3R Plan would align with Green Print’s solid waste target area objective SW4,

which details maximizing recycling efforts across City government, community residents, local businesses, and organizations.

Section 403.7032(2) Florida Statutes provides that by the year 2020 the goal for the state and local governmental entities, private companies and organizations, and the general public is to recycle at least 75 percent of municipal solid waste.<sup>5</sup> This initiative starts the process of state wide compliance with the Florida Department of Environmental Protection’s (FDEP) recycling plan.

In addition to the Florida Statute the 3R Plan for TLH is an appendix of the master plan update. TLH is also preparing a sustainability management plan which closely aligns with the 3R Plan. Airport Improvement Program funding is available for all airports that have or plan to prepare or update a master plan. Updating the master plan includes addressing issues related to solid waste recycling at the airport. Funding through this avenue ensured the development of this 3R plan in tandem with the master plan update. These factors combined with TLH’s adoption of the City’s Green Print have fostered the atmosphere to begin the creation and implementation of this 3R Plan.

### 1.1.4 Airport Recycling Infrastructure Inventory –

Currently TLH has a recycling collection area that is located underneath the terminal and another outside the security identification display area for cardboard recycling. **Figure 1-1** shows the locations of the recycling bins and cardboard recycling dumpster.

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<sup>4</sup> City of Tallahassee Green Print, 2/7/2017,  
<http://www.tal.gov.com/Uploads/Public/Documents/eper/pdf/greenprint/greenprint.pdf>

<sup>5</sup> Fla. Stat. § 403.7032(2) (2013)



**Table 1.3** details the existing recycling procedures for recyclables located at TLH facilities within the following three facility groups: Direct Control, Influence but No Direct Control, and Neither Control nor Influence.

### ***Direct Control***

Facilities that fall under this category generate waste that is directly collected and managed by TLH.

### ***Influence but No Direct Control***

Major airline tenants operate in direct vicinity of the terminal which allows TLH to influence how the waste generated from operations is managed. The table below outlines the facilities that are influenced by TLH but not directly controlled.









The table below outlines the facilities that are influenced by TLH but not directly controlled.

### ***Neither Control nor Influence***

Facilities within this category consist of mostly privately owned industrial use facilities and any privately-owned operation that is not owned or influenced by TLH. Although TLH is the leaseholder on properties most industrial use tenants have their own waste management and collection services established and do not use waste collection facilities offered by TLH.

TLH's visioning team drafted goals and objectives for the Sustainability Management Plan (SMP). The Waste Management goal's objectives of TLH's SMP helped define the performance indicators that are detailed below:

<b>Table 1.3 Current Airport Recyclables Management Summary</b>				
<b>Recyclable Material</b>	<b>Area(s) of Airport</b>	<b>Collection Storage Capacity</b>	<b>Collector</b>	<b>Level of Airport Control</b>
<b>Paper</b> 	Industrial Tenants	Vary in size	Various waste haulers	Neither control nor influence
	Terminal	38-gallon*	City	Direct Control
<b>Corrugated Cardboard</b> 	Industrial tenants, Terminal and Maintenance Dumpsters	8 cubic yards	City	Direct control
<b>Aluminum</b> 	Terminal	32-gallon/38-gallon*	City	Direct control
<b>Plastic</b> 	Industrial Tenants Vary in size	Various waste haulers	Neither control nor influence	Direct control
	Terminal	50-gallon/38-gallon*	City	Direct control
<b>Glass</b> 	Terminal	32-gallons/38-gallon*	City	Direct control
<b>Dry Bulky Waste</b> 	TLH Maintenance	30 cubic yards	City	Direct control
	Contractors	Dependent on contract agreement and project		Influence but no direct

\* 38-gallon recycling (single stream) containers added to the terminal in 2017.



### **1.1.5 Recycling, Reuse and Waste Reduction Program Performance –**

**Goal:** *Improve recycling and reusable product usage at TLH while decreasing the amount of total solid waste generated at TLH.*

#### **Objectives:**

- Increase recycling efforts.
- Identify and address highest sources of waste pollution.
- Establish waste stream volume calculation and characterization.
- Partner with established airline and rental car recycling plans to increase total recycling output.

#### **Initiatives:**

- Develop a 3R Plan to reduce the waste stream at TLH through source reduction purchasing strategies, collection station equipment, recycling, and tenant education.
- Contact airline and rental car providers about partnering in waste reduction and recycling efforts.
- Incorporate recycling topics into staff and tenant stakeholder meetings.
- Encourage passenger participation in the terminal's recycling program via signage and bin labeling.
- Promote recycling at the security checkpoint where passengers discard plastic beverage containers and other recyclables by placing recycling bins in accessible and convenient locations.
- Provide easily accessible recycling areas consistent with TLH program that facilitate successful collection services for recyclables.
- Use different-colored waste bags to distinguish recyclables from non-recyclables.

The above-listed initiatives, objectives and goals were established for the Sustainability Management Plan with FAA Guidance, FDEP's state recycling plan, and Tallahassee Green Print in mind. Stakeholders held visioning meetings to discuss and create the above listed goals, objectives, and initiatives. Implementation of the initiatives will depend on their likelihood of success, feasibility, and staffing and budgetary constraints. Stakeholders also identified supporting performance indicators during the meetings. Waste and recycling management

recommendations described in **Section 1.7** align with the goals, objectives, and initiatives identified during the TLH SMP visioning meetings.

TLH SMP Vision Team Members –



The Champions who will ensure the implementation and upkeep of this plan have been identified during the TLH SMP Vision meeting. The Champions for TLH include the *Superintendent of Airport Facilities Management* and the *City Solid Waste Management Recycling Coordinator*.

During the second TLH SMP Visioning Meeting, challenges associated with measuring the percentage recyclables diverted from landfill disposal were identified and discussed. Much of the waste stream is dumped on a schedule and is not collected based on weight or volume (only the compactor and construction debris roll offs are weighed at pickup). Therefore, there is no weighing equipment or system in place to quantify the total amount of diverted recyclable waste leaving the airport. Developing a sampling or estimation-based method of quantifying and tracking future recycling efforts will be required.

## 1.2 Waste Audit

The TLH waste audit consisted of a baseline year review of 2015 waste generation and costs associated with hauling/treatment. **Table 1.4** shows the annual waste generated at the Airport from 2015 to 2017. In 2017, multiple 38-gallon multi-stream recycling containers were added



inside the terminal for passenger use. The information in **Table 1.4** comes from the trash compactor located under the terminal and the construction and demolition debris roll off container located outside the security identification display area. These are the only waste containers weighed on pickup. Both are weighed when emptied by the City’s Waste Management personnel.

<b>Table 1.4 Annual Waste Generated at TLH</b>			
<b>Year</b>	<b>R301* (Tons)</b>	<b>R999* (Tons)</b>	<b>Cost (USD)</b>
2015	69.42	336.65	27,919.03
2016	72.00	136.00	17,153.25
2017	78.00	63.00	12,893.56
USD – United States Dollar *Waste Container Badge Numbers: R301 – Trash compactor under airport terminal R999 – Open roll off container used for dry bulky waste			

The composition of waste contained in R301 (the 40- cubic yard compactor beneath the terminal) consists of compactible municipal solid waste (MSW). MSW includes everyday items that are used and then discarded such as product packaging, bottles, food scraps, and newspapers. The main source of MSW contained in R301 is TLH terminal. The TLH terminal waste contribution is influenced by high passenger foot traffic and the various concessionaire tenants housed within the terminal. All trash bins located within the terminal are emptied, collected, hauled, and dumped in the compactor at least daily. In addition to the trash collected from bins in the terminal, the offices located within the terminal also contribute to the total terminal MSW generated and disposed of at the compactor.

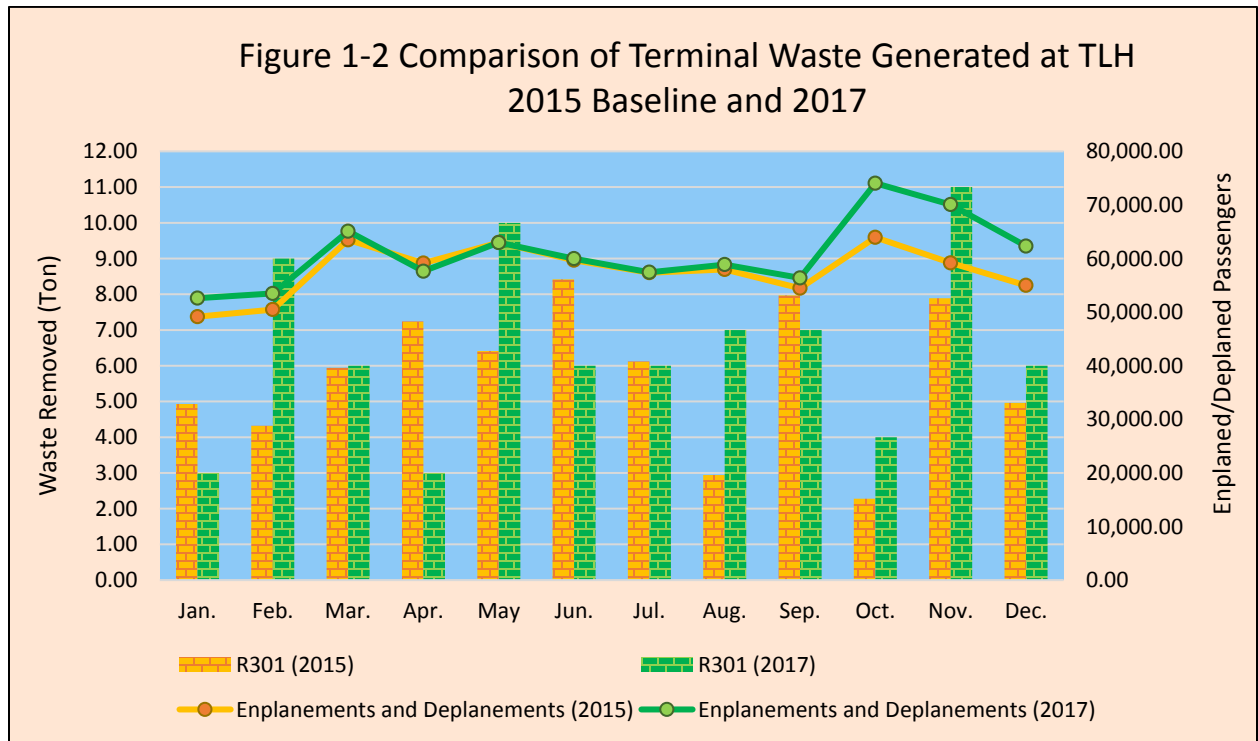
R999 is a 30-cubic-yard, open, roll-off container that is located near the maintenance facility. It contains non-compactable dry bulky waste which includes construction and demolition debris waste from major projects or anything that is not able to be compacted. Main contributions to R999 are major projects or large waste that cannot fit within the R301 trash compactor. The spike in the quantity of waste in 2015 shown in **Table 1.4** for R999 is due to a tree removal project that occurred at TLH. The frequency of servicing for R999 depends upon projects at TLH.

This container is only emptied by City Waste Management on request. This waste stream is not directly influenced by TLH Terminal and thus is not included in this 3R Plan.



**Figure 1-2** shows a graphic representation of the foot traffic within the terminal from enplaned and deplaned passengers and tons of waste generated during the waste audit baseline of 2015, and 2017

when the recycling bins were installed. Foot traffic at TLH comes from the FAA Terminal Area Forecast for commercial airport operations. R301 waste amounts fluctuate due to concessionaires and construction renovation projects inside the terminal.





The data for R301 shown in **Figure 1-2** is from the monthly utility bills that TLH receives from the City waste management department. **Figure 1-2** shows that even with an increase in foot traffic during October, the addition of terminal side recycling bins (October 2017) has helped to divert/lower recorded trash from going into the R301 terminal compactor. The November 2017 billing cycle for servicing R301 was higher due to an additional R301 compactor service because of a significant increase in foot traffic and therefore higher volume of waste.

### 1.3 Recycling Feasibility Review



TLH 6-Cubic Yard Recycling Dumpster

In the beginning of this study in 2015 (baseline) TLH had a small-scale recycling initiative that involved aluminum, cardboard, glass, and plastic; efforts are detailed in **Section 1.1.2**. Since then, the TLH has added twelve (12) 38-gallon, multi-stream recycling bins inside the terminal and a six-cubic yard front loader single stream recycling dumpster outside the security identification display area fence. The addition of containers for recycled goods has increased TLH's

ability to capture recyclable waste. TLH now has the estimated potential, assuming all the recycling bins in the terminal are 25 percent full when emptied daily, to recycle 1.5 cubic yards per week or 17.1 cubic yards per year.

Currently TLH's recycling hauling is handled by the City Waste Management department which has a contract with Marpan Recycling. City Waste Management deals with all waste hauling that occurs at the TLH. The City picks up recyclables from TLH on a route, and the recyclable volume comingles with another customers' recycling on the same route. As such, the ability to record the weight of recyclables belonging solely to TLH is currently not feasible.



TLH Terminal Waste and Recycling Bins

TLH has the potential to further increase recycling efforts due to existing recycling facilities that can be expanded and its ample space for growth and development. Options to increase recycling efforts include partnering with City Waste Management to conduct a study on raw amounts of recyclables diverted from landfills by TLH, conducting periodic waste characterizations to assess progress, adding additional recycling as TLH increases in size and activity and incorporating recycling topics such as best practices and recyclable material identification into tenant stakeholder meetings and staff meetings.

Besides the Resource Conservation and Recovery Act (RCRA), the U.S. Government has relied on state and local government to regulate waste management including recycling. Some of the state and local legislation that affect recycling implementation are as follows:

Florida Statute 403.7032 (2) states that by the year 2020 recycling of MSW should be at least 75 percent for the state of Florida. This 75 percent should be represented by all state and local governmental entities, private companies and organizations, and the public. This statute aligns with TLH's efforts to increase recycling efforts through compliance with the statute.

Basic waste management guidelines apply to recyclable materials including proper labeling, condition of containers, and storage.

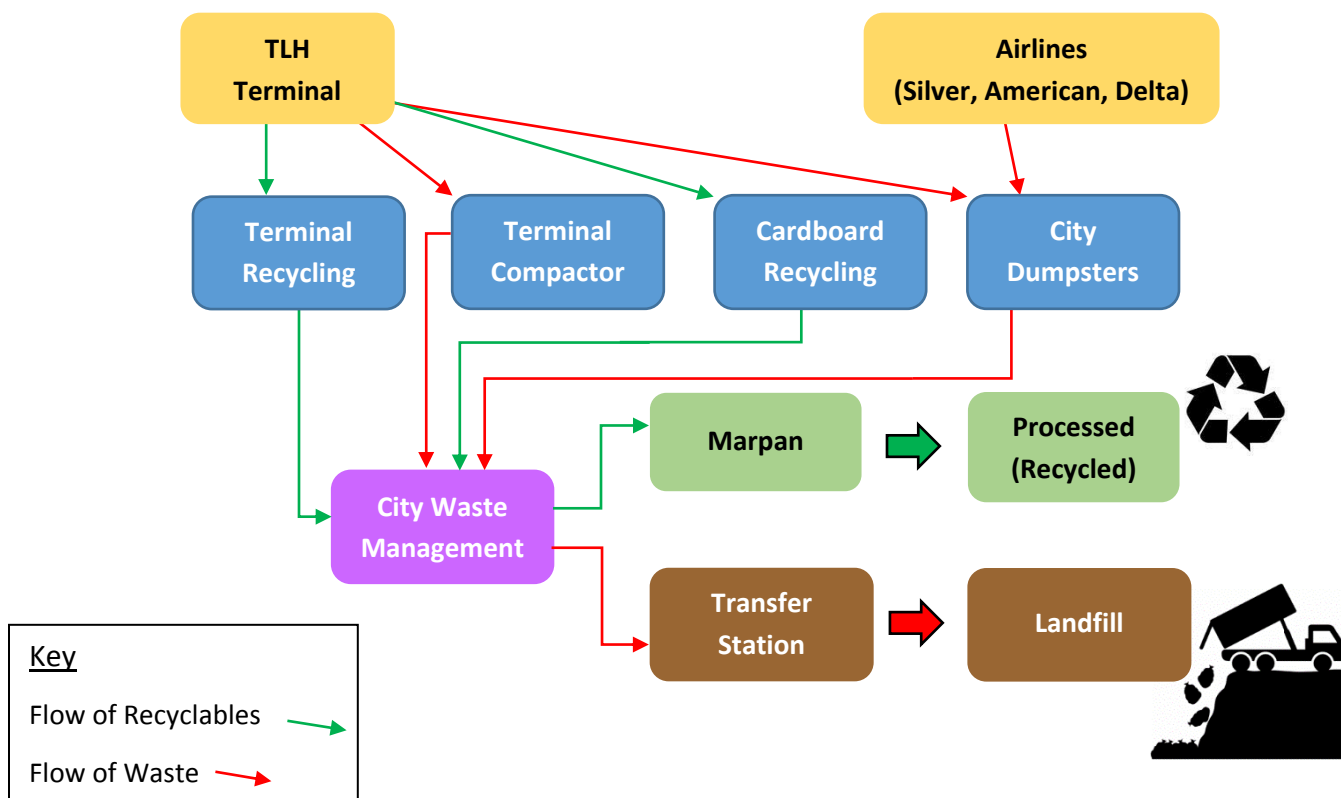
#### 1.4 Recycling Program Operation and Maintenance Requirement



The City is ultimately responsible for coordinating and funding the waste management program that services TLH. The City contracted Marpan to provide recyclables sorting and marketing of its value for TLH. Transport of recyclables from TLH to Marpan facilities is conducted by the City waste management department. Waste and recyclables generated at TLH are collected and stored by TLH custodial staff and major airline tenants. The

quantities and data related to recyclables production, management, and processing is tracked by Marpan and then reported to the City. The recyclables and waste generated at TLH are collected

by City waste management and transported to a designated landfill or transfer station based on contents of the truck. The flow diagram below details the responsible entities for waste and recyclables collection, hauling, and disposal/processing from generation to disposal. Industrial tenants' waste and recyclables generation and management is not currently tracked by TLH and thus is not considered in this 3R Plan.



Maintenance of recycling and waste containers is handled by Marpan, as detailed in the contract. All damaged containers will be replaced by Marpan unless damaged by City employees. The City is responsible for documenting, reporting, and ordering waste containers, while Marpan is responsible for having sufficient supplies to meet the orders placed by the City.



## 1.5 Waste Management Contracts Review

Waste management at TLH is handled and funded by TLH including collection and hauling of waste. The City’s collection of waste at TLH is conducted in the same manner that waste from other public entities would be collected. Descriptions of service schedule can be found in **Section 1.1**.

### 1.5.1 Current Contract Review –

The City entered into a contract with Marpan Recycling in 2013 for a ten-year period ending in 2023 with two possible five-year extensions. The terms of this contract appoint Marpan as the primary material recovery facility (MRF) for processing all City recyclables brought to the MRF. Marpan Recycling pays the City monthly, for each ton of inbound recyclables delivered.



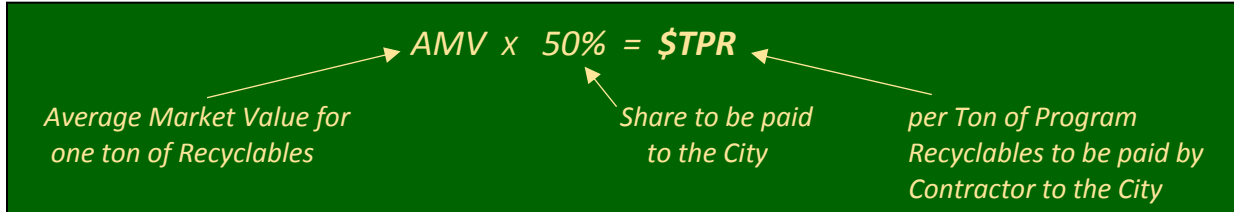
The payment value depends on whether the recycled materials are comingled or not. Comingled, or single stream recyclables incur a Contractor Fee from Marpan of \$50.00 per ton of recyclables processed, due to the extra labor for sorting the comingled recyclables. The Contractor Fee is deducted from the revenue that would be paid to the City each month for comingled recyclables. Pre-separated, multi-stream, recyclables do not need to be sorted during processing and therefore do not get charged a contractor fee for sorting before processing.

#### Single Stream Recyclables Calculation:

$[AMV - (\text{Contractor's Fee})] \times 50\% = \$TPR$		
<i>Average Market Value for one ton of Recyclables</i>	<i>Share to be paid to the City</i>	<i>per Ton of Program Recyclables to be paid by Contractor to the City</i>

It should be noted that the City does not pay out funds to Marpan. For example, if the revenue from recyclables is less than the \$50.00 of contractor fee neither side compensates each other for the processing of the recyclables.

Multi-Stream Recyclables Calculation(s):



**Table 1.5** shows the cost breakdown for the recycled goods processing and the revenue that is returned to the City. The information and data for **Table 1.5** comes from the 2013 contract between Marpan and the City, in addition to market values for recyclables from the baseline year of 2015.

**1.5.2 Future Contract Considerations –**

MRF Contract:

Currently the City benefits from this contract because costs of this contract are the original bid price and container rental fee, with no charge for processing from the City, see Section 1.5.1. The fee per ton of processed comingled recyclables is taken from average market value (AMV) paid to the City for the recyclables. This financial benefit can be increased by investing in multi-stream recycling containers that would pre-sort the recyclables being processed and alleviate the contractor fee Marpan charges for sorting comingled recyclables. Cost comparisons of single stream and multi stream recycling are discussed in Section 1.6.2.

Airport Tenant Contract(s):

Tenants that use the airfield and hangars at TLH have their own waste contracts that could be updated to include 3R guidelines. These guidelines can include measures on reporting recycling efforts, incentives for tenants who recycle, or requirements for minimum waste



**Table 1.5 Marpan and City Contract Pricing (2013 & 2015)**

Material	Index Descriptions	2013 Market Value (\$/Ton)	2015 Market Value (\$/Ton)	2013 Material Mix %	2015 Material Mix %	2013 AMV (\$/Ton)	2015 AMV (\$/Ton)
Newspaper	PS 8 baled, F.O.B. seller's dock	\$77.50	\$60.00	20.0%	20.00%	\$15.50	\$12.00
Corrugated containers	PS 11 baled, F.O.B. seller's dock	\$122.50	\$88.33	10.0%	10.49%	\$12.25	\$9.27
Mixed paper	PS 1 baled, F.O.B. seller's dock	\$72.50	\$53.95	22.0%	27.18%	\$15.95	\$14.67
Steel cans	\$/Ton, sorted, baled and delivered	\$115.00	\$60.58	3.7%	2.59%	\$4.26	\$1.57
Aluminum cans	Cents/lb., sorted, baled and delivered	\$1,590.00	\$1,280.00	2.4%	1.23%	\$38.16	\$15.70
Plastics #3-#7	Cents/lb., sorted, baled and delivered	\$6.00	\$10.27	5.3%	2.32%	\$0.32	\$0.24
PET	Cents/lb., sorted, baled and delivered	\$350.00	\$239.18	5.7%	3.41%	\$19.95	\$8.16
Natural HDPE	Cents/lb., sorted, baled and delivered	\$540.00	\$594.58	2.2%	1.01%	\$11.18	\$5.98
Colored HDPE	Cents/lb., sorted, baled and delivered	\$340.00	\$452.08	3.2%	1.18%	\$10.88	\$5.35
Glass (3 mix)	\$/ton, delivered	\$0.00	\$0.00	22.5%	22.92%	\$0.00	\$0.00
Contamination	N/A	\$0.00	\$0.00	3.0%	7.67%	\$0.00	\$0.00
				<b>100.0%</b>		<b>\$129.15</b>	<b>\$72.94</b>

**Key –**
**PS:** Resin identification code symbol for polystyrene based products.

**F.O.B.:** "Free on Board" shipping term to describe the point at which a seller is no longer responsible for shipping cost.

**AMV:** Average Market Value



diversion rates. Updating lease hold contracts at TLH can be a straightforward way to encourage areas of limited control to start implementing recycling and reduction initiatives. When renewal of tenant contracts occur, recycling initiatives can be put in place to help increase TLH’s overall waste diversion efforts.

## 1.6 Potential for Cost Savings or Revenue Generation

### 1.6.1 Current Fee and Reimbursement Summary

Marpan is responsible for updating the market value of the recyclables monthly. This market value dictates how much compensation the City receives from Marpan for processing the recyclables. **Table 1.5** shows the market value of recyclables from the year the contract was formed, 2013, and this report’s baseline year of assessment, 2015. Market value of comingled recyclables has dropped considerably from issues including increased contamination during and after processing in addition to increased standards for recyclable materials from foreign countries who accept the processed goods.

Below in **Table 1.6** is a breakdown of the fees the City waste management department applies to servicing the waste containers at TLH. These fees are applied to the terminal trash compactor and the construction and demolition debris roll off container.

Fee Type	Cost/Unit
Hauling fee (R301 Terminal Trash Compactor)	\$36.50/ton
Roll-off pull charge (R301 Terminal Trash Compactor)	\$200.50/pull
Special service charge (R999 Open Top Bin)	\$57.29/pull

*Source: City of Tallahassee Waste Management*

Increasing recyclables hauled from TLH would reduce the frequency of non-scheduled pulls for municipal solid waste from compactor and open top bins, so that the Airport can amend their contract to decrease the number of pickups effectively reducing the waste management fees. In addition, collecting and processing recyclables garners reimbursement funds per ton of recyclable instead of incurring charges for TLH for tons of waste to be hauled away.

### 1.6.2 Single Stream vs Multi-Stream Recycling

Making the distinction on which type of collection stream recycling to implement is important when choosing receptacles to use. The paragraphs below explain the differences between single and multi-stream recycling collection and processing styles.

#### Single Stream Recycling

Use of single stream recycling accumulation involves comingling all recyclables including: glass, aluminum, paper, etc. into one waste stream. At the MRF, the single stream recycling process involves physically sorting and processing the comingled recyclables. Because the MRF is sorting the recyclables they either charge the recyclables source (TLH), or take the recyclables at no charge and process the sorted recyclables with no financial compensation to the source. Single stream recycling bins are more readily used by the public. Comingled bins involve the least amount of effort and time required by a person to sort their recyclable waste into the appropriate container.



#### **SINGLE STREAM** recycling

Single stream recycling does have a higher contamination rate in addition to lower yield of quality products post processing. This occurs due to comingling of products like glass that often gets broken during the collection and transportation process in route to the MRF. Broken pieces of glass can contaminate the paper and other recyclable products reducing the quality of recycled goods.

#### Multi-Stream Recycling

Multi-stream recycling involves collecting recyclables in separate containers based on the recyclable material type. Sorting recyclables pre-collection allows for expedited processing and alleviates the fee charged by the recycling facility for manually sorting the recyclables at the MRF. Multi-stream recycling is not as readily-used by the public compared to single stream recycling. Confusion over what should and shouldn't go into multi-stream recycling bins can inhibit passersby using the bins at all. Confusion on proper identification and sorting of recyclables often leads to people in a hurry to throw candidate recyclables in the general trash can.



Multi-stream recycling bin confusion can be alleviated with proper signage describing which recyclables can be placed in them. Standardized signage with clear picture representation enables people to quickly assess and discard the recyclable into the proper bin. Having clear and easily-understood labeling can increase their use. Increased use of multi-stream recycling bins allows a higher percentage of recyclables to be diverted from TLH's waste stream. The more properly-sorted multi-stream recyclables captured, the lower the overall waste costs will be for TLH.

## 1.7 Plan to Minimize Solid Waste Generation

### 1.7.1 Opportunities to Enhance Recycling at the Airport

TLH's current recycling initiative covers multiple materials including: aluminum, cardboard, glass, paper, and plastic in a single and multi-stream format (**Table 1.3**). Currently TLH has the facilities and room to expand and improve the current recycling program in place. Currently the only limiting factor would be the capacity of staff to handle collection; there are plenty of areas for growth and support from the City and Marpan to facilitate increased recycling at TLH.



TLH created a sustainability management plan (SMP) with designated goals, objectives, and initiatives for elements of sustainability including solid waste management. The visioning team for the SMP met to discuss and adopt the goal, objectives, and initiatives for the solid waste management element, these are outlined in **Section 1.1.5** of this 3R Plan. Responsibility for the success of the 3R Plan lies with the Champions who will compile information on the progress of the established goals, objectives, and initiatives.

The goals, objectives, and initiatives put forth by the stakeholders is an evolving process that may shift in the future to include different markers of success. As such, the Champions will ensure proper metrics and initiatives are in place to reach those goals.



The current contract between City and Marpan lasts until 2023 and is currently beneficial to TLH in supporting current and future recycling efforts. Marpan provides single- and multi-stream recyclable processing with current market value compensation. The City holds the contract with Marpan and ultimately controls the selection or modification of recycling contracts. Because of this TLH cannot directly change who handles and processes the waste and recyclables that are generated at its facility.

As discussed earlier, there is currently no feasible method of quantifying the contents of the recycling dumpsters by weight or volume. This makes estimating overall percentages and amounts of recyclable materials diverted from the overall waste stream difficult. It is recommended that this be discussed with City waste management to develop methods for weighing and sampling recyclables collected to allow for an accurate estimate of recyclables diverted from the landfill by TLH. Having the City weigh the containers periodically throughout the year, before transporting to Marpan for processing, will allow TLH to track and measure the effectiveness and success of its 3R plan.

### **1.7.2 Future Projects**

The 3R Plan is an appendix to the overall Master Plan Update and was prepared with current and future projects occurring at TLH in mind. Likewise, information and recommendations contained within this document will be considered when planning future TLH projects, including capital improvement projects. TLH has already made the conscious effort to improve recycling efforts through the drafting of the Sustainability Management Plan and this 3R plan. These documents can be used to help guide and inform future expansion and allocation of capital improvement funds, where appropriate.

TLH has multiple regulatory compliance documents that could cause conflicts with some additions and expansions to the recycling effort. For example, the Wildlife Hazard Management Plan does not allow for composting at TLH. Composting may attract scavengers that could become wildlife hazards for TLH operations. Conflicts like these are minor and do not greatly affect the goal of increasing recycling, reuse, and reduction at TLH, but should still be considered moving forward.

To continue the current momentum of improvements to recycling at TLH, the objectives and initiatives of the Sustainability Management Plan were established to make TLH accountable for continual measured growth in recycling, reuse, and reduction. To review the goals, objectives,

and initiatives of TLH concerning waste management please see **Section 1.1.5**. The goals, objectives, and initiatives will be used in future projects and will be reviewed and updated to adapt with the evolution and growth of TLH. The Champions responsible for the implementation of this plan will be responsible with tracking and periodic review of the goals, objectives, and initiatives. Opportunities to incorporate future recommendations, program enhancements, and improvements to the Sustainability Management Plan and this 3R Plan will be evaluated by the Champions and stakeholders as they are identified.

The recycling market has seen a change in the types of materials used in daily life. For example, more digital or electronic media is being used in place of standard paper. These shifts in the types of materials used daily have changed the waste stream and effected the quantity and proportion



of certain types of recycled goods.<sup>6</sup> As the waste stream changes so too must the ability of the industry to adapt and meet the needs of the public. In addition to the changing waste stream, the steady increase in contamination in recyclables presents a problem. With the increase of recycled goods on a global scale those who reuse the recycled products have shifted focus from quantity of product to the overall quality of the recycled goods. This switch to higher quality of goods has made the buyers more critical of the quality of recycled products

received. The sorting of recycled materials has become more specific and complex for the public. Many single stream suppliers have seen an increase in contamination of recyclables from general public's lack of understanding of what goes in recycling and the higher prices to process mixed recyclables at the MRF. Better sorting of recyclable goods yields a higher quality product.

TLH is doing its part by increasing passengers' accessibility to recycling options as well as using both single- and multi-stream recycling collection bins to decrease contamination and increase utilization. TLH has committed to regularly evaluating and updating recycling and waste management to keep up with the current trends and demands on a global and regional scale.

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<sup>6</sup> Susan Robinson, *The Changing Waste Stream*, Waste Management, November 13, 2014.

TLH has placed terminal recycling bins adjacent to waste bins to prompt passengers to divert recyclables materials from the trash can when they are discarding. Education is important in ensuring proper sorting and disposal of recyclables to ensure low contamination in growing volumes of diverted recyclables.

### 1.7.3 Education and Outreach

Education starts with proper and easily understood signage that clearly indicates acceptable and non-acceptable recyclables to place in the containers. There is currently a nationwide campaign being led by the non-profit Recycle Across America to standardize recycling labels across industries to alleviate confusion when recycling into the acceptable receptacle.<sup>7</sup> Standard labeling is important and can be accomplished through help of non-profits or by ensuring clear concurrent labels are being used in TLH.



Highlighting TLH's new recycling containers through social media or signs will increase utilization among passengers and employees alike. Outreach describing the location and type of recycling containers located inside the terminal can help boost employee and tenant encouragement of usage to passengers that they interact with inside the terminal. Any education or outreach concerning recycling will increase usage at TLH, and will help ensure continued progress to TLH's goals.

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<sup>7</sup> Recycle Across America, About Us, February 2018, <http://www.recycleacrossamerica.org/the-solution-about-us>