



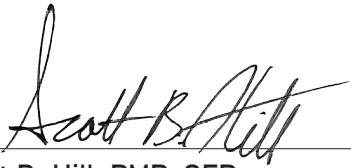
Sustainable Management Plan Houston Airport System

August 2018





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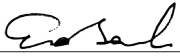
8/3/18

Scott B. Hill, PMP, SFP **Date**
Interim Division Manager – Asset Management
HOUSTON AIRPORT SYSTEM



8/3/18

Monty B. Nunn **Date**
Assistant Director of Asset Planning
HOUSTON AIRPORT SYSTEM



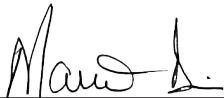
8/7/18

Robert A. Barker **Date**
Chief Development Officer – Infrastructure
HOUSTON AIRPORT SYSTEM



8/7/18

Jesus H. Saenz, Jr., IAP **Date**
Chief Operating Officer
HOUSTON AIRPORT SYSTEM



8/8/18

Mario C. Diaz **Date**
Director of Aviation
HOUSTON AIRPORT SYSTEM

A Message from the Director of Aviation, Houston Airport System



The Houston Airport System (HAS) takes pride in maintaining a safe and dynamic air services network that fosters economic vitality for the transportation industry and facilitates a strong level of global connectivity. From fleet services to terminal improvements, HAS manages many aspects of airport operations simultaneously while enhancing the passenger experience through our planning initiatives. This Sustainable Management Plan (SMP) demonstrates our continued commitment to provide world-class airport operations, our commitment to operational efficiency, and our determination to become more sustainable.

In the aviation industry, operational efficiency is recognized as an added fourth pillar to the typical “triple bottom line” definition of sustainability, which evaluates the social, environmental, and economic aspects of our operation. To that end, the goals of this SMP not only promote energy, waste, water, and greenhouse gas reductions, but also focus on enhancing our sustainable operations in the areas of design, assets and infrastructure, and procurement.

This SMP also represents another important step toward achieving our vision “to be a five-star global air service gateway where the magic of flight is celebrated.” For the HAS staff, celebrating the magic of flight is inevitably embedded in the many day-to-day operations that often go unnoticed but are critical to keeping airport operations running smoothly and effectively.

Beyond the operational benefits of sustainable planning, setting sustainability goals is now globally recognized as a best practice for businesses. Aligning global and local goals embodies the HAS mission to connect the people, cultures, and economies of the world to Houston. Whether through shared metrics or the efficient use of natural resources, sustainability plays a key role in connecting businesses and communities around the globe.

In that spirit, this SMP seeks to showcase the Houston Airport System as leaders of global transportation hubs that continue to strive for operational excellence. The goals in the SMP provide a pathway for HAS to capitalize on past successes, continue to increase sustainable practices, and enhance overall operational efficiency.

A handwritten signature in blue ink that reads "Mario C. Diaz". The signature is fluid and cursive, written in a professional style.

Mario C. Diaz

DIRECTOR OF AVIATION
HOUSTON AIRPORT SYSTEM

Sustainability at Houston's Airports



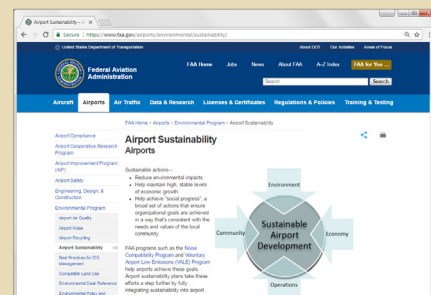
HAS owns and operates George Bush Intercontinental Airport and William P. Hobby Airport, two airports selected as recipients of sustainability planning grants from the Federal Aviation Administration (FAA). Through this study, HAS committed to a continuous improvement approach to sustainable management by promoting economic, social, and environmental excellence through actions that enhance the Airport System's mission of connecting people, businesses, cultures, and economies of the world to Houston.

This SMP report presents the outcomes of a multi-year planning process that engaged numerous HAS stakeholders.^{1/}

^{1/} Detailed information on plan development is provided in a series of internal technical memoranda that memorialize the stakeholder engagement activities and outcomes upon which this plan was developed.

FAA's Sustainability Master Plan Pilot Program

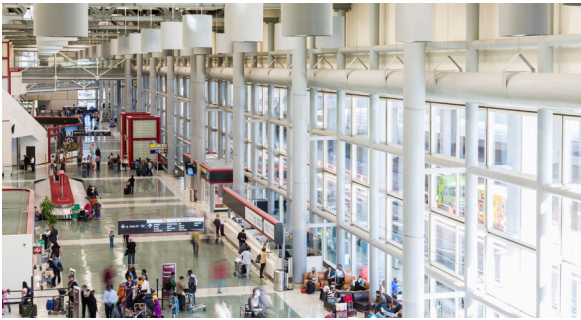
FAA initiated a pilot program in 2010 to make sustainability a core objective in airport planning. More information on the FAA's sustainability master plan pilot program is available at www.faa.gov/airports/environmental/sustainability.



Characteristics of Houston Airport System's commercial service airports in Fiscal Years (FY) 2014 and 2016

(FY 2014 and 2016 served as the baseline years for the SMP.)

George Bush Intercontinental Airport (IAH)



George Bush Intercontinental Airport, or IAH, is Houston's flagship airport, serving as a global gateway for over 40 million passengers each year. IAH connects Houston with over 180 destinations worldwide from five terminals.

40.3 million passengers in FY 2014
(42.9 million passengers in FY 2016)

Approximately **6** million square feet
of terminal area across
5 terminal buildings

Over **180** destinations served

More than **700** daily flight departures

William P. Hobby Airport (HOU)



William P. Hobby Airport, or HOU, is Houston's secondary airport, serving over 50 destinations throughout the United States and Latin America.

11.6 million passengers in FY 2014
(12.7 million passengers in FY 2016)

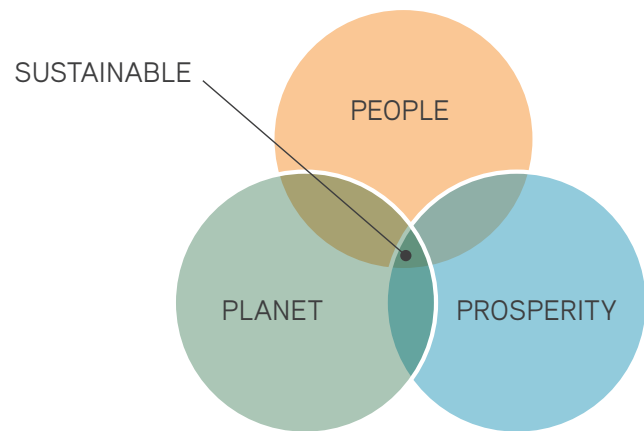
Approximately **1** million square feet
of terminal area across
2 terminal buildings

Over **50** destinations served

What Sustainability Means to Houston's Airports

The approach and scope of the HAS sustainable management plan reflects the values-driven nature of the organization—the plan is defined for practical implementation through integration into day-to-day airport operations.

HAS adopted the triple-bottom-line definition of sustainability, which defines the need to be responsible stewards of the Airport System's financial, natural, and people resources and is often depicted as the intersection between people, planet, and prosperity. This definition is represented in the mission statement for the SMP.



Sustainable Management Plan | Mission Statement

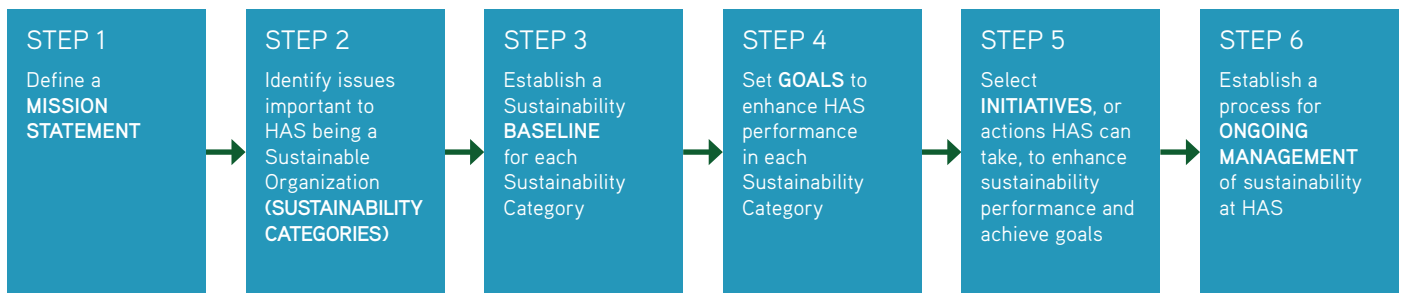
To promote economic, social, and environmental excellence through actions that enhance our mission of connecting the people, businesses, cultures, and economies of the world to Houston.

Sustainable management is recognized as critical to doing business today. Sustainability is not only about minimizing effects on resources or “using less,” it is about recognizing the role of airports in creating enduring communities, acknowledging the social costs of air travel, and creating airports that are resilient to future stresses such as energy or water scarcity. It is about operating airports in an efficient and responsible manner such that Houston's airports are able to connect the world and Houston now and well into the future. To that end, the SMP is a critical aspect of HAS's strategic priorities:

- Make our passengers happy
- Achieve “opening day fresh” conditions for our airports
- Build the platforms for future success
- Invest in our partnerships and our employees

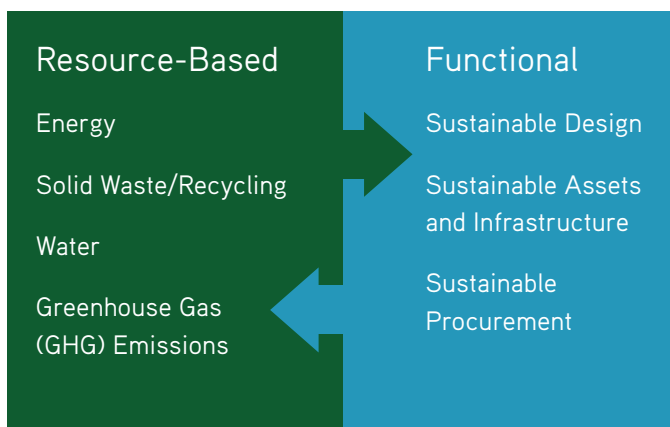
Sustainable Management Planning

Sustainable management plans reflect local issues and stakeholder values. This plan was developed with HAS leadership and staff through a series of engagement activities, including meetings, workshops, open houses, online surveys, and online collaboration websites. In addition, tenants of IAH and HOU, airlines business partners, and local airport and sustainability experts were engaged in the planning process. A six-step planning process was employed to develop the SMP:



Sustainability Categories

Resource-based and functional sustainability categories were defined to identify the issues important to HAS's journey to becoming a sustainable organization and to define early operational areas of focus.



Phased Approach to Sustainable Management Planning

The planning process was conducted in two phases, designed to familiarize HAS with the sustainable management planning process during Phase 1 and scale up the plan during Phase 2.

PHASE 1 included development of the mission statement, and identification and assessment (i.e., baseline, goals, and initiatives) of two sustainability categories with a baseline year of FY 2014.

PHASE 2 included the identification and assessment of five sustainability categories using a baseline year of FY 2016, and establishment of the groundwork for ongoing management and continuous improvement of the sustainability program following a Plan-Do-Check-Adjust implementation format.



Implementing the SMP

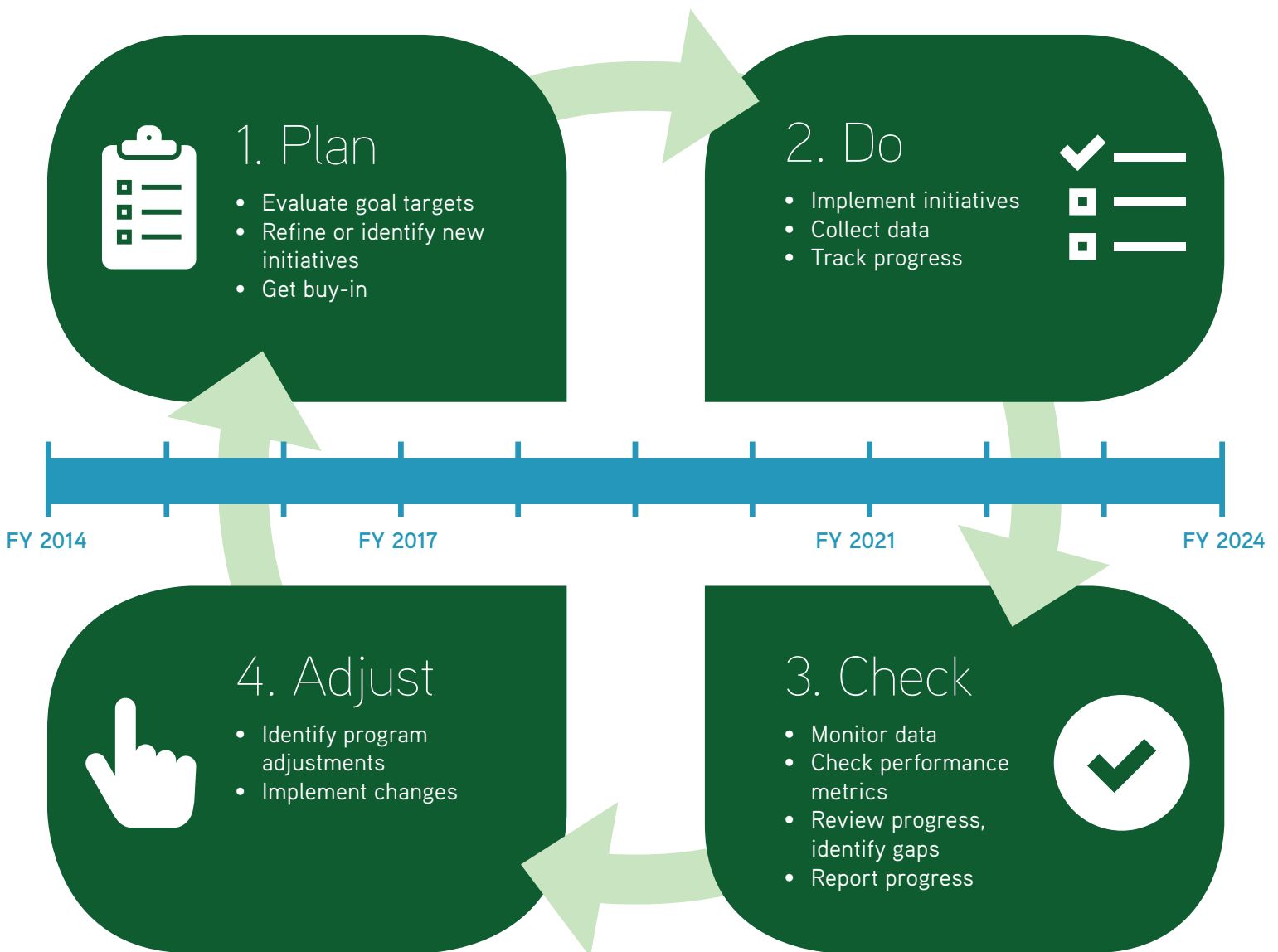
HAS is committed to implementing the SMP by tracking and reporting progress and revising goals and initiatives, as necessary, to support continuous improvement of the program over time. The process is based on the Plan-Do-Check-Adjust model and applies to both implementation of individual initiatives as well as the program overall.

The program will be implemented within the HAS Infrastructure Division. A Sustainability Coordinator from the Infrastructure Asset Management Group will manage the program, and serve as the point of coordination between program leadership and the day-to-day champions from across the Infrastructure Division that are responsible for initiative implementation and data tracking.

Implementation Element	Role	Responsibilities
Program Leadership	Chief Development Officer	<ul style="list-style-type: none"> Overall program leadership and direction Reporting to senior staff Internal and external communications (message topics, approval)
Program Coordination	Sustainability Coordinator	<ul style="list-style-type: none"> Overall leadership and direction with Program Leadership Internal and external communications (message development) Collaboration with SMP Champions to review progress and adjust plan, as needed Report out program performance towards goals Liaison between champions and leadership
Day-to-Day Program Implementation	SMP Champions: <ul style="list-style-type: none"> Energy Solid Waste/Recycling Water GHG Emissions Sustainable Design Sustainable Assets and Infrastructure Sustainable Procurement 	<ul style="list-style-type: none"> Initiative implementation Performance data tracking Report out initiative status and performance data

Program implementation through FY 2024 involves quarterly and annual progress reporting, annual adjustments as needed, and a 5-year progress evaluation in FY 2021, as described on the following pages.

Implementing the SMP



1.

Development of the SMP—which defined goals and initiatives—was the first “plan” step of the program, marking HAS’s entry into the continuous improvement implementation process. In addition to developing the plan, **SMP Champions** develop initiative implementation plans that define how and when initiatives will be implemented and metrics to measure implementation progress. The initiative implementation plans are approved by the **Sustainability Coordinator** and **Program Leadership**.

2.

SMP Champions implement initiatives and track data on initiative progress on an ongoing basis. Implementation schedules will vary by initiative, so schedules must be clearly defined in initiative implementation plans. Additionally, the **Sustainability Coordinator**, with direction from and approval of **Program Leadership**, defines program messaging to support internal and external communications.

3.

On a quarterly basis, **SMP Champions** review initiative implementation progress with the **Sustainability Coordinator**. On an annual basis, SMP Champions track SMP performance metrics (e.g., overall energy use or water use) and adjust initiatives, with the Sustainability Coordinator approval, as needed. At the 5-year point, the Sustainability Coordinator examines goal progress and adjusts the overall program, as needed. The **Sustainability Coordinator** then reports annually on implementation progress to and identifies gaps in progress with **Program Leadership**.

4.

The **Sustainability Coordinator** and **Program Leadership** identify strategic program adjustments at both the initiative and programmatic levels. With **Program Leadership** approval of needed adjustments, the **Sustainability Coordinator** leads efforts to revise plan documentation and initiative implementation plans, with support from **SMP Champions**.

EACH YEAR

Annual Update Cycle

- Q1 Review Annual Targets and SMP Goals
- Q2 Check-in
- Q3 Evaluate Data and Progress
- Q4 Annual Review Meeting

2021

Five-year Progress Check

- Evaluate Progress Towards Goals
- Adjust as Needed

Baseline Sustainability Performance and Goals



Baseline Sustainability Performance and Goals

A baseline for each sustainability category was established by defining current levels of resource consumption, levels of waste generation, and actions implemented to date. The baseline provides an understanding of how current airport operations affect HAS sustainability performance and supports the establishment of goals to enhance sustainability performance over time.

The baseline was established using City of Houston records of resource consumption and waste generation as well as institutional staff knowledge. Readily available data were prioritized for collection to facilitate ongoing data tracking in the future. Baseline data were compiled and analyzed in a data management tool, which HAS will maintain in the future to track performance data and progress towards goal achievement.

The baseline served as the foundation for setting goals to improve HAS's sustainability performance at IAH and HOU. Goals for each respective category are also presented on the following pages. Most goals are operational in that they address performance for both airports as a whole. Two sustainability categories—solid waste/recycling and energy—include goals specific to design and construction projects. These goals were defined to clearly articulate a high-priority focus on how design and construction can contribute to advancing sustainability performance.

HAS Sustainability Categories

-  Solid Waste/Recycling
-  Energy
-  Water
-  Greenhouse Gas Emissions
-  Sustainable Design
-  Sustainable Assets and Infrastructure
-  Sustainable Procurement

Baseline Year

The baseline year for solid waste/recycling and energy is FY 2014, as these categories were assessed as part of Phase 1 of the SMP. The baseline year for the remaining categories assessed as part of Phase 2 of the SMP is FY 2016.

Planning Period for Goal Setting

Goals were set to improve sustainability performance by the year FY 2024, which aligns with the planned completion of the IAH Terminal Redevelopment Program (ITRP). Under new operating conditions, HAS will reevaluate progress and update the SMP accordingly.



Solid Waste/Recycling

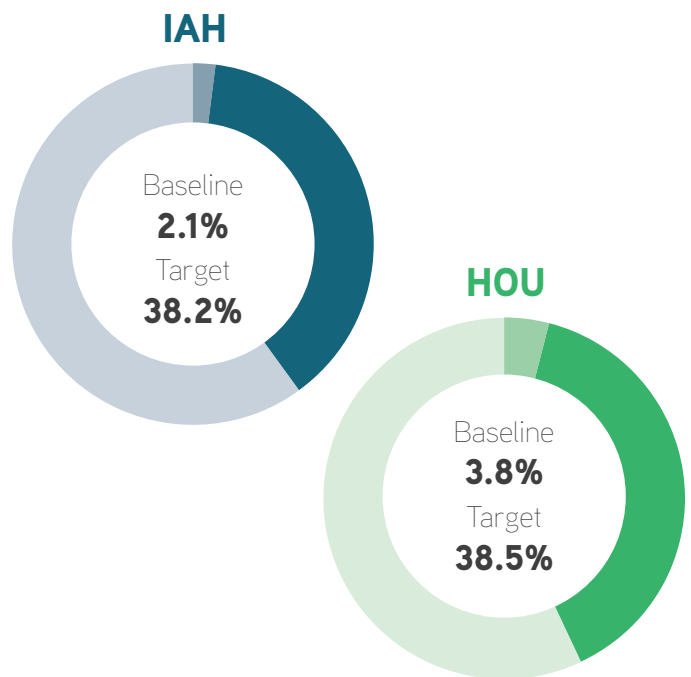
The municipal solid waste streams from IAH and HOU comprise waste sent to a landfill under a City of Houston waste services contract and waste recycled under a City recyclable materials contract. The majority of waste at each airport is collected at the terminal facilities (over 70 percent at IAH and 85 percent at HOU) in three-compartment containers in public areas and is disposed of in separate waste and recyclables compactors on terminal loading docks.

Baseline rates of diverting waste from the landfill were 2.1 percent from IAH and 3.8 percent from HOU.

Several challenges with the current recycling program contribute to low landfill diversion rates at IAH and HOU: (1) lack of documented procedures and reoccurring training on recycling procedures; (2) lack of consistent collocation of trash and recyclables compactors on loading docks to provide clear visual confirmation of the separation of waste and recyclables; (3) lack of clear signage in multiple languages at the loading docks; and (4) lack of clear and consistent recycling guidance at points of disposal in public areas. Several of these challenges contribute to the contamination of the recycling stream with waste, causing recyclables to be diverted to the landfill.

Solid waste disposal costs are expected to increase over 35 percent by FY 2024 under current waste management practices. By reducing the amount of solid waste sent to the landfill by 5 percent per year, HAS would reduce waste disposal costs by over \$45,000 per year on average through FY 2024 (based on FY 2014 unit costs). Opportunities to reduce landfilled waste, presented on page 22, primarily comprise programmatic initiatives to be implemented by HAS staff. Therefore, with a focus on year-over-year reduction of landfilled waste through staff effort, HAS expects to realize an overall reduction in operating costs through FY 2024.

Baseline Landfill Diversion Rate | FY 2014 Target Landfill Diversion Rate | FY 2024



Goals

Operational Goal

Increase the landfill diversion rate at IAH and HOU by 5 percent per year.

Construction Goal

For any new construction or renovation at IAH and HOU over the next 10 years, design and build to provide waste/recycling infrastructure that promotes a culture of recycling.

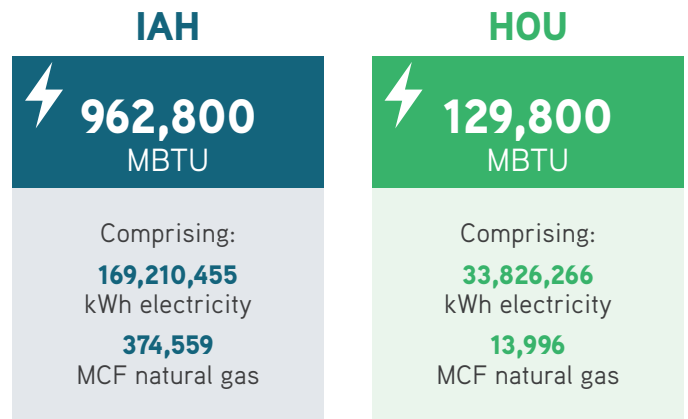


CenterPoint Energy provides and distributes electricity and natural gas to IAH and HOU. Central plants at each airport provide facility heating and cooling by pumping chilled and heated water through the facilities for occupant comfort and environmental control. HAS has achieved significant accomplishments in energy conservation, including: (1) renovation of the IAH Central Plant to provide high-efficiency heating and cooling; (2) Continuous Commissioning® at HOU related to chilled water system performance and then broadened to include other energy efficiency measures; (3) Retro-commissioning (RCx) at terminals at both airports that identified almost \$2 million in annual energy cost savings with a simple payback of a few years; and (4) the HAS Operational Readiness and Airport Transfer (ORAT) team that supports project activation.

The Texas legislature enacted public building energy efficiency standards that require political subdivisions in areas designated as being in nonattainment with Clean Air Act standards, such as Houston, to establish a goal to reduce electricity consumption by at least 5 percent per year from 2011 to 2021. The SMP operational goal for energy efficiency aligns with this state legislation.

The near-term planned and proposed energy efficiency projects presented on page 22 will support HAS’s achievement of approximately 50 percent of the operational goal and are anticipated to save \$3.1 million annually by FY 2024. Additional initiatives, such as an employee incentive program and other opportunities realized through emerging technologies will be employed to cover the gap and should be evaluated in the context of the overall energy savings associated with achieving the full energy reduction goal, which is projected to average \$3.6 million annually through FY 2024 (based on 2017 unit costs). Additionally, development of high performing buildings adds a minor (e.g., 0–4 percent) premium to development costs, so cost premiums for new buildings should also be evaluated in the context of overall savings associated with achievement of the energy operational goal.

Baseline Energy Use | FY 2014



Target Energy Use | FY 2024



Goals

Operational Goal

Reduce energy use at IAH and HOU by 5 percent per year.

Construction Goal

For any new construction or renovation at IAH and HOU over the next 10 years, design and build to achieve a minimum improvement of 20 percent energy performance over the most current version of the local energy code.



Water

The City of Houston Public Works Department provides potable water to IAH and HOU. Fairly constant quantities of water have been consumed at each airport over the past five years, roughly half of which is used for cooling and half for terminal building end uses such as restroom fixtures and concessionaires. Irrigation water use is minimal.

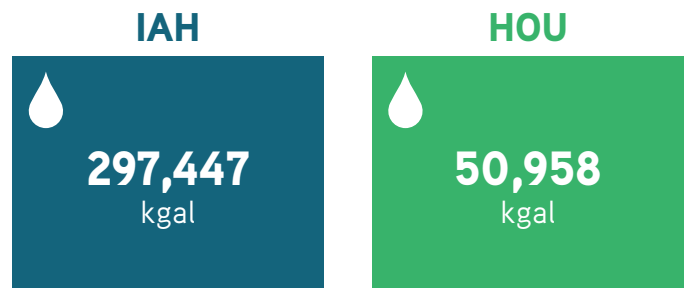
Cooling towers are operated to maintain equipment efficiency, as defined in customized manuals, based on replacing cooling tower water as it becomes increasingly concentrated with dissolved solids. HAS's open circuit cooling towers are inherently less water efficient than other types of systems and become less efficient with age.

End use water efficiency improvements include adding automatic sensors to restroom fixtures, but a significant low-flow fixture retrofit has not been completed. Additionally, water use is not metered at the tenant-level, so tenants are not incentivized to conserve water through water use charges.

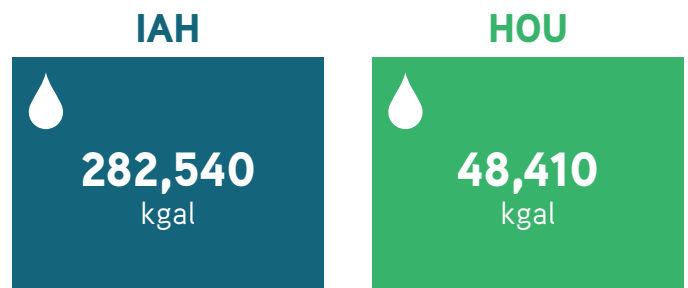
Almost six times more water is used at IAH than HOU, and water use at HOU is more efficient on a per passenger basis—8.0 gallons per enplaned passenger at HOU versus 13.9 gallons per enplaned passenger at IAH.

The goal to reduce potable water use by 5 percent by FY 2024 would provide an estimated average savings of \$500,000 per year through FY 2024 (based on 2016 unit costs). To support achieving this goal, initiatives, shown on page 23, include major capital investment projects such as rain water capture and a water reuse system; design enhancements during new construction and renovation such as installing water sub-meters and low-flow fixtures; and programmatic opportunities to reduce water use such as cooling tower efficiency monitoring and leak detection. Design enhancements such as low-flow fixtures typically have a payback period of 1 to 2 years. As initiatives are further defined, HAS will evaluate them in the context of the projected annual savings.

Baseline Water Use | FY 2016



Target Water Use | FY 2024



Goal

Reduce potable water use by 5 percent by FY 2024.



Greenhouse Gas Emissions

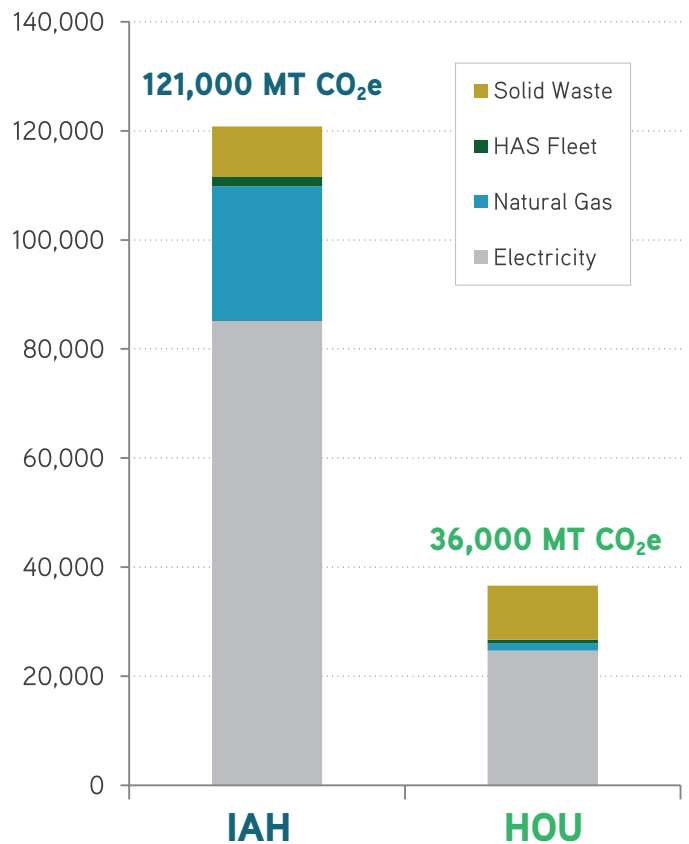
When fossil fuels are burned (e.g., to power buildings and vehicles) or created from decomposing organic waste, GHGs such as carbon dioxide (CO₂) are emitted. GHGs trap heat in the atmosphere, resulting in warming temperatures and poorer overall air quality, which can impact health. Reductions in GHGs often result from greater operational efficiencies.

Developing a GHG emissions baseline is a core component of sustainability planning, and tracking GHG emissions can be accomplished in tandem with other sustainability initiatives around energy use and solid waste. Emissions are reported by ownership and control of the emissions source:

- Scope 1 emissions are those generated and controlled by the airport operator, such as onsite electricity generation and operation of airport vehicles.
- Scope 2 emissions are those generated offsite from activities controlled by the airport operator, such as the offsite generation of electricity or solid waste disposal.
- Scope 3 emissions are generated and controlled by airport tenants and other stakeholders, and include emissions from aircraft as well as tenant and passenger vehicles.

Scope 1 and 2 emissions, which align with data collected for other sustainability categories and reflect activities directly controlled by HAS, were quantified. Scope 3 emissions are not directly controlled by HAS and were not quantified. Emissions are reported as metric tons of CO₂ equivalent (MT CO₂e), which combines CO₂ emissions with the CO₂-equivalent emissions of other gases for a single metric that supports development of straightforward inventories.

Baseline GHG Emissions | FY 2016



Indicator

Quantify and track GHG emissions as a performance indicator of energy and solid waste/recycling performance.



Sustainable Design

Sustainable design is the process of designing the built environment in a way that reduces impacts on natural resources and on those affected by the built environment, such as building occupants. The objectives include reducing the consumption of non-renewable resources (e.g., fossil fuels, building materials), minimizing waste (e.g., water, energy, and trash), and optimizing operational and maintenance performance. Through prioritization of these objectives, the concept of high-performance buildings that embody excellent efficiency, health, and durability has emerged.

Although sustainable design criteria have not been formally adopted to guide airport development projects at IAH and HOU, current design guidance provides information on energy, plumbing, recycling, and material reuse relevant to sustainable buildings. Furthermore, two facilities have been certified under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system at IAH. Additionally, HAS has committed to several near-term sustainable design initiatives.



**2 LEED CERTIFIED
Facilities at IAH**

Commitments to:

Developing
**SUSTAINABLE
DESIGN STANDARDS**

NET ZERO increase in energy
consumption at IAH terminal
campus with ITRP

Consider following
LEED standards
in future design

Goal

Incorporate SMP goals into HAS design guidance by the end of FY 2018.



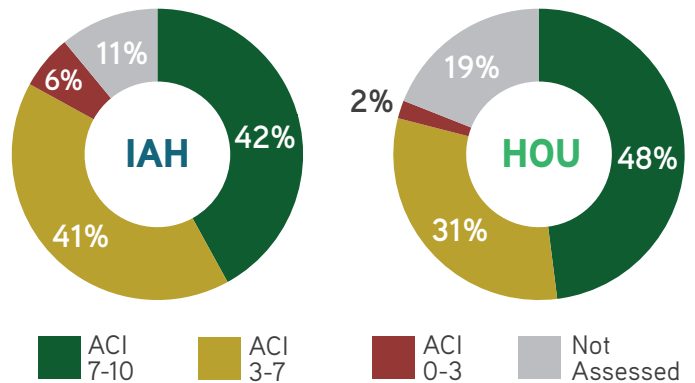
Sustainable Assets & Infrastructure

Asset management is a systematic process to maintain constructed assets, such as buildings, equipment, fleet, and infrastructure such as utilities and pavement. HAS is deploying a Strategic Asset Management (SAM) program to: (1) manage assets at the system level with responsibilities for tracking and sharing asset conditions and (2) make decisions (i.e., capital-funded projects, O&M work orders, and preventative maintenance work orders) to improve asset conditions.

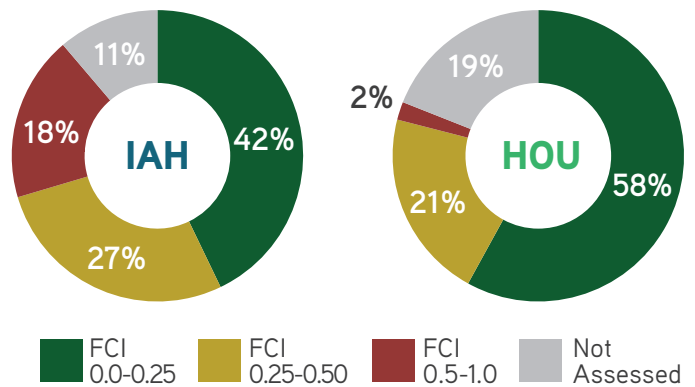
The intent of the SAM program is to ensure the reliability and condition of assets to support informed business decisions. To this end, HAS defined two performance metrics to serve as key indicators of asset system conditions—the Actual Conditions Index and the Financial Conditions Index.

- Actual Conditions Index (ACI) is an objective numerical rating of an asset system condition using standardized criteria to indicate actual operating conditions and remaining life. Green scores indicate fully operational asset systems that fully meet mission requirements and have over 10 years of remaining service life. Yellow scores indicate reduced operability and/or degraded mission capability with 3 to 5 years of remaining service life, and red scores indicate non-operational asset systems and systems that do not meet all system needs.
- Financial Conditions Index (FCI) is the ratio of the total cost of deferred maintenance to the asset system's current replacement value, coded as green and yellow indicating that maintenance is appropriate rather than system replacement and red indicating the need for system replacement.

Actual Conditions Index



Financial Conditions Index



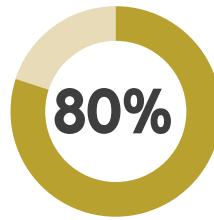
Goal

Track the reliability and condition of infrastructure assets to support informed business decisions.



Sustainable Procurement

Although HAS does not formally integrate sustainable practices into its procurement process, it receives sustainability related responses as part of contractor bids. HAS surveyed contractors about their companies' commitment to sustainability. Based on self-reporting, 80 percent of HAS contractors have sustainable business practices. The number of HAS contractors that prioritize sustainability in their business is a metric that supports advancing a culture of sustainability at HAS through future procurements. Contractor survey responses also identified over 90 sustainable business practices HAS may consider when integrating sustainability into future procurements.



80% of HAS Contractors have Sustainable Business Practices

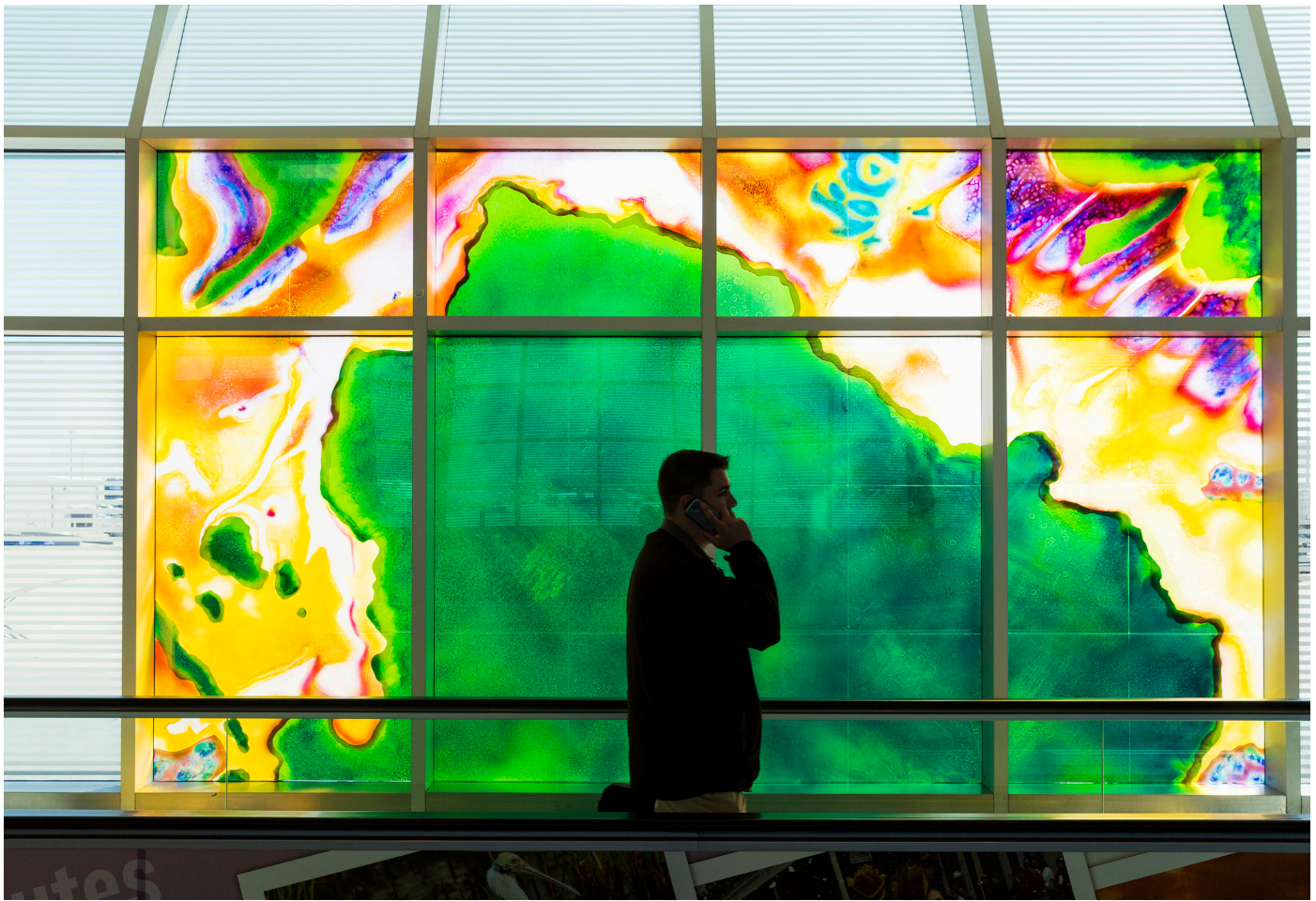


90 Sustainability Practices Identified by HAS Contractors

Goal

Ensure 100 percent of HAS contractors demonstrate a commitment to sustainability by FY 2024.

Sustainability Initiatives



New actions and continuation of existing actions likely to contribute to the achievement of sustainability performance goals were identified and evaluated against a set of criteria to aid in prioritization. Evaluation criteria included the initiatives' need for capital expenditure; ability to reduce operations and maintenance costs; alignment with strategic priorities; ability to be replicated across airports and systems; and ability to reduce energy use, waste disposed, and water consumed.

The following table summarizes initiatives by sustainability category prioritized for short-term implementation (through FY 2020) and mid-term implementation (through FY 2024) at IAH and HOU. HAS will revisit initiatives identified but not prioritized for near- or mid-term implementation for longer term implementation beyond FY 2024.

For each listed initiative, the table identifies the party responsible for initiative implementation, which is typically an SMP Champion, and, in some cases, the Sustainability Coordinator. Initiatives' contributions to meeting other sustainability goals are also identified to highlight additional benefits of an initiative across sustainability categories.

Recommended Short- and Mid-term Initiatives to Meet Sustainability Goals

INITIATIVES, BY SUSTAINABILITY CATEGORY	IMPLEMENTATION			SUSTAINABILITY BENEFIT						
	NEAR-TERM	MID-TERM	RESPONSIBLE PARTY	Recycling	Energy	Water	GHG Emissions	Design	Assets & Infrastructure	Procurement
Solid Waste/Recycling Initiatives										
Participate in City negotiations for future solid waste contracts			SC RC	X			X			X
Designate a waste management lead to champion waste reduction, implement SMP initiatives, track and report metrics, track City waste/recycling initiatives			SC RC	X			X			
Develop and update standard operating procedures for waste collection and disposal at each airport, include assessment and update of waste/recycling signage (public and back-of-house)			RC	X			X			
Implement a training program on waste collection and disposal procedures			RC	X			X			
Update tenant and concessions contract language to the reflect recycling program and requirements			RC	X			X			
Incorporate infrastructure recycling needs and recycling of C&D in planning and design guidance for new construction and renovations			RC DC	X			X	X		
Encourage support of HAS's recycling program in tenant renovations and retrofits			RC DC	X			X	X		
Incorporate waste reduction language into design and construction documents			RC DC	X			X	X		
Incorporate construction waste training in new Construction Training Center			RC DC	X			X			
Waste stream focus: implement enhanced paper reduction strategies			RC	X			X			
Waste stream focus: implement a composting pilot program			RC	X			X			
Energy Initiatives										
Design the new Mickey Leland International Terminal (MLIT) to be energy Independent			DC EC		X		X	X		
Implement near-real time monitoring-based commissioning software in the building automation system (BAS) control scheme			EC		X		X			
Implement regular retrocommissioning (RCx) schedules for key systems and include recommissioning of systems affected by modification			EC		X		X		X	
Implement monitoring-based commissioning to ensure all equipment is operating as designed			EC		X		X		X	
Continue to upgrade to high efficiency light fixtures (i.e., LED)			EC		X		X			
Convert remaining pneumatic controls to Direct Digital Controls (DDC)			EC		X		X			
Establish employee incentive programs for energy efficient behavior			EC		X		X			

Responsible Party Key:

AC Assets Champion	GC GHG Emissions Champion	RC Recycling Champion
DC Design Champion	ITRP IAH International Terminal Redevelopment Program	SC Sustainability Coordinator
EC Energy Champion	PC Procurement Champion	WC Water Champion

Notes:
 Near-term: Through FY 2020 Mid-term: FY 2020-2024

SUSTAINABILITY BENEFIT

INITIATIVES, BY SUSTAINABILITY CATEGORY	IMPLEMENTATION		RESPONSIBLE PARTY	Recycling	Energy	Water	GHG Emissions	Design	Assets & Infrastructure	Procurement
	NEAR-TERM	MID-TERM								
Water Initiatives										
Develop program to review and adjust irrigation controls annually to avoid overwatering			SC WC			X				
Develop/document a program to periodically review and improve cooling tower efficiencies			WC			X				
Complete installation of low-flow fixtures during construction and renovation projects			WC			X		X		
As part of new construction and renovation, install water sub-meters			ITRP WC			X		X		
Develop a leak detection and pipe repair program			WC			X			X	
Install rainwater capture and reuse systems to offset use of potable water for irrigation			ITRP WC			X				
Raise awareness of water conservation and HAS successes, and consider partnership with organizations such as EPA WaterSense or Save Water Texas			SC WC			X				
Install a water reuse system to offset potable water use for fixtures and cooling towers (consider opportunity in ITRP)			ITRP			X		X		
GHG Emissions Initiatives										
Develop process to track GHG emissions annually to provide an indicator of progress on related goals			SC GC				X			
Define process to quantify GHG emissions reductions associated with operational efficiency projects and communicate those benefits			SC GC				X			
Support City efforts to incentivize low-carbon activities (e.g., transit use, carpooling) and quantify GHG emissions savings			SC GC		X		X			
Sustainable Design Initiatives										
Develop Sustainable Design Guidance for HAS projects			DC	X	X	X	X	X		
Document sustainability successes achieved during design and construction to support stakeholder messaging			DC					X		
Develop Sustainable Design Guidance for tenant projects			DC	X	X	X	X	X		
Sustainable Assets and Infrastructure Initiatives										
Set a repeating schedule for routine conditions assessments of defined asset systems			AC						X	
Develop an Enterprise Asset Management System (EAMS) policy			AC						X	
Automate asset conditions tracking tool			AC						X	
Integrate sustainability performance data tracking into EAMS			AC	X	X	X	X	X	X	
Sustainable Procurement Initiatives										
Integrate an SMP Champion into the procurement process to define evaluation criteria and review bids			SC PC							X
Develop program to recognize contractor sustainability successes (Houston Office of Business Opportunity and "Industry Days" events)			SC PC							X
Enhance sustainable procurement evaluation criteria annually			SC PC							X



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We are committed to producing documents in a responsible manner that minimizes the impact on the environment.