FUTURE FRIENDLY

SUSTAINABILITY & RESILIENCY MANAGEMENT PLAN

PHX DVT GYR
FUTURE FRIENDLY: AVIATION SUSTAINABILITY

City of Phoenix
Aviation Department
Prepared: June 2025

Director's Message

Sustainability and resiliency are at the core of how we operate, plan, and prepare for the future. At the City of Phoenix Aviation Department, we don't view these principles as standalone initiatives. They are embedded in how we deliver value to our passengers, business partners and the communities we serve.

This updated Sustainability & Resiliency Management Plan reflects the evolution of our commitment. It builds on the foundation we've established, responds to the complexity of today's challenges and sets a clear path forward. From reducing emissions and conserving water and energy, to improving our waste systems, strengthening infrastructure, and ensuring safe, uninterrupted operations, the plan outlines a coordinated and measurable approach to long-term performance.

What sets this plan apart is its reach. It draws in every Division, every project, and every function of the Department, uniting our people under a shared purpose. It helps us not only protect resources but use them wisely. It helps us not only design for today but adapt for tomorrow.

I am proud of what we've achieved and even more confident in what's ahead. Together with our dedicated staff and engaged stakeholders, we are shaping an airport system that is not only reliable and resource-efficient, but resilient, responsible, and ready for the future.

CHAD R. MAKOVSKY, A.A.E
Aviation Director

Executive Summary

The City of Phoenix Aviation Department oversees a high-performing airport system that includes Phoenix Sky Harbor International Airport, Deer Valley Airport and Goodyear Airport. As critical drivers of mobility, commerce and regional growth, these airports operate in the unique and demanding environment of the Sonoran Desert, where climate change, limited water resources and rapid urban growth create increasing challenges.

To address these challenges, the Sustainability and Resiliency Management Plan (the plan) provides a strategic framework to further integrate sustainability and resiliency across all aspects of airport planning, administration, operations and decision-making. In alignment with the City of Phoenix's sustainability goals and global frameworks like the United Nations Sustainable Development Goals, the plan is designed to reduce environmental impacts, build resilience and enhance community and economic value.

Organized around interconnected focus areas, the plan includes clearly defined objectives, tailored goals and strategic actions that guide implementation. Each focus area reflects the Aviation Department's priorities where it can manage, influence or drive meaningful change.

Developed through a collaborative and research-informed process, the plan incorporates input and guidance from internal divisions and industry leaders while aligning with citywide and stakeholder priorities. With defined roles, regular performance monitoring and a process for continuous improvement, the plan promotes an implementation structure that remains accountable, adaptable and effective. It also reinforces reporting, internal communications and operational integration to further embed sustainability and resiliency into the Aviation Department's culture.

Through this plan, the Aviation Department strengthens its Future Friendly approach, ensuring that the City of Phoenix's airports remain sustainable and resilient in the face of future challenges, while continuing to support the region's long-term prosperity.

Focus Areas

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ACRONYMS

ACA
Airport Carbon Accreditation

ACI
Airports Council International

ACRP
Airport Cooperative Research Program

CAP
Climate Action Plan

DVT
Deer Valley Airport

FAA
Federal Aviation Administration

GYR
Goodyear Airport

LEED
Leadership in Energy and Environmental Design

PAAB
Phoenix Aviation Advisory Board

PHX
Sky Harbor International Airport

SDG
Sustainable Development Goal

TRB
Transportation Research Board

Introduction

Within the distinctive setting of the Sonoran Desert, the City of Phoenix airports serve as vital community assets, connecting the region to national and global destinations, while enabling transportation, commerce and continued economic development in one of the fastest-growing regions in the country. Surrounded by saguaro-studded mountains and sweeping desert skies, these airports operate in a landscape that is as breathtaking as it is demanding. Prolonged periods of extreme heat, persistent drought and limited water resources have long defined life in this desert and have always necessitated forward-thinking solutions that emphasize balance with the surroundings.

From its earliest history, the region now known as the City of Phoenix was shaped by principles of sustainability, resiliency and innovation, first practiced by Indigenous peoples who developed advanced systems to manage water, thrive in high temperatures and live in harmony with the desert environment. That legacy laid the groundwork for modern infrastructure that supports both a growing population and environmental health. Today, that legacy continues with renewed urgency, as growing climate risks threaten the long-term viability of critical infrastructure, including the airports that power the region's economy and connectivity.

To meet this challenge, the City of Phoenix Aviation Department has embraced a Future Friendly approach, one that looks beyond today's pressures and plans for a more sustainable, resilient tomorrow. The Sustainability and Resiliency Management Plan (the plan) serves as a comprehensive roadmap to reinforce the environmental, operational, economic and social foundations of the airports. Supporting the City of Phoenix's broader sustainability goals, the plan focuses on reducing carbon emissions, conserving water, increasing energy efficiency, transitioning to renewable energy, implementing low-impact development and protecting surrounding ecosystems. It also prioritizes long-term resilience by preparing infrastructure and operations to withstand extreme weather, shifting climate patterns and unexpected disruptions.

Through modern innovation, strategic collaboration and a deep respect for the desert environment, the Aviation Department is shaping an airport system that honors the past while preparing for the future. The Future Friendly approach reinforces the Aviation Department's leadership in sustainable aviation and affirms a commitment to building an airport network that thrives, not only despite environmental challenges, but because of its ability to anticipate, adapt and lead. In doing so, the Aviation Department continues to model how airports can power economic vitality while safeguarding the quality of life for generations to come.

Who We Are

The Aviation Department manages a dynamic and high-performing airport system that powers regional mobility, trade and economic growth. This system includes three airports, each serving a unique role.

Phoenix Sky Harbor International Airport (PHX)

Known as America's Friendliest Airport®, PHX serves over 50 million passengers annually and has a footprint of 3,400 acres. As the 2nd busiest 3-runway airport in the world, it operates 24/7 as a central hub for domestic and global travel, as well as a critical link for freight and cargo.

Phoenix Deer Valley Airport (DVT)

One of the busiest general aviation airports in the U.S., DVT facilitates around 400,000 annual flight operations, mainly from flight schools, private pilots and business aviation. With two runways and multiple fixed-base operators on over 900 acres, it supports a range of non-commercial aviation needs.

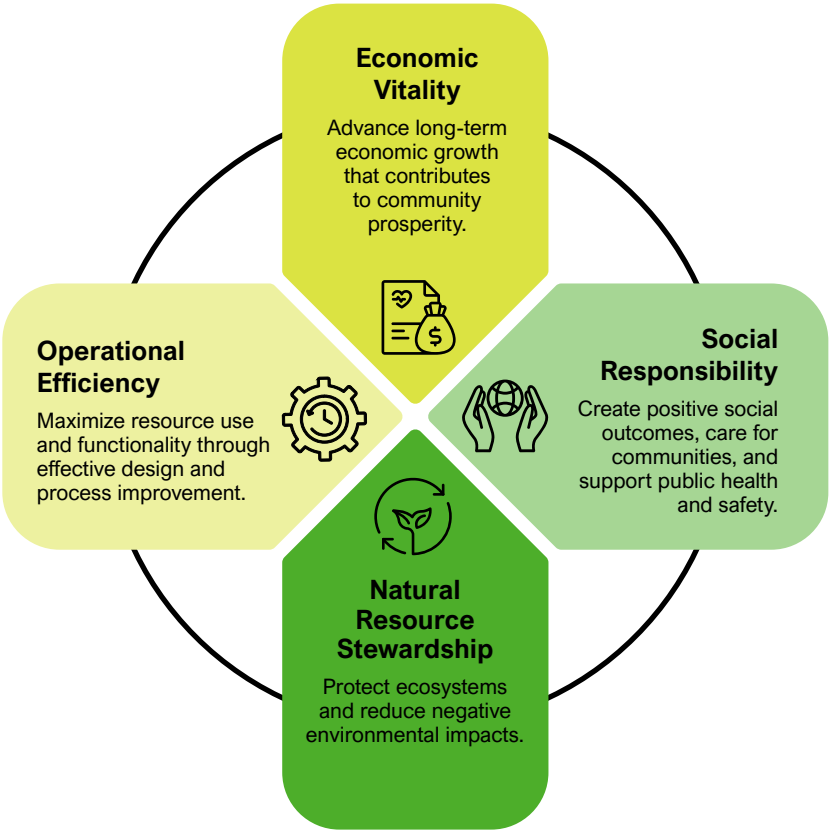
Phoenix Goodyear Airport (GYR)

GYR serves primarily as a general aviation reliever airport with a strong focus on aircraft maintenance, storage and pilot training programs. Situated on nearly 800 acres, its broad physical layout, wide runway and development potential make it a valuable strategic asset for the region's long-term aviation infrastructure needs.

What Sustainability and Resiliency Mean to Us

Sustainability

Defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs,"[1] the concept of sustainability acknowledges that unrestrained growth can have negative implications, such as the use of finite natural resources, degradation of the environment, human health and safety issues and impacts to the surrounding communities. Without consideration and action to mitigate impacts, the ability of future generations to thrive may be at risk. The Aviation Department characterizes sustainability following Airports Council International (ACI) and the Federal Aviation Administration (FAA) guidance on sustainability in the aviation industry as the balancing economic vitality with operational efficiency, natural resource stewardship and social responsibility.[2]



1 United Nations - Our Common Future: Report of the World Commission on Environment and Development

2 Federal Aviation Administration - Airport Sustainability

Robust

Strong and durable systems designed to withstand disruptions without loss of function.

Redundant

Built-in backup systems or capacities that maintain operations in event of a failure

Resourceful

The ability to adapt creatively and effectively use available resources

Integrated

Coordinated planning and communication across systems, stakeholders, and sectors to ensure a unified response and recovery.

Resiliency

Resiliency is the capacity of infrastructure and operations to withstand, recover from and adapt to disruptions. The changing climate introduces greater uncertainties and risks with increasing frequency and severity of weather events, which may impact infrastructure or operations, such as monsoon flash flooding exceeding drainage systems and heat-related runway closures. Resiliency encompasses the ability to respond to and quickly recover from short-term disruptions as well as the ability to adapt to changing long-term conditions.[3] Building resilience means understanding how conditions will change, identifying vulnerable infrastructure and taking proactive steps to ensure the airport is prepared to safely remain operational.

3 Rockefeller Foundation - Resilience Framework

Our Approach

The Aviation Department has consistently integrated sustainability Department-wide using a formalized approach following adoption of the Sustainability Management Plan in 2015.

A focus on continual improvement has driven enhancements to the plan as the airports grow, operations change, and new technologies emerge. With this comprehensive update, the Aviation Department has established resilience as a central priority, guiding how the Aviation Department prepares for and adapts to future challenges. This updated plan expands the scope of focus areas to reflect a more holistic approach, including the addition of a dedicated focus on land stewardship, ensuring a more comprehensive approach that protects natural resources, supports safe operations and strengthens the long-term sustainability and resiliency of the airport system.

This plan serves as a strategic framework to integrate sustainability and resiliency into every aspect of airport planning, operations, administration and decision-making. It concentrates on areas where the Aviation Department has the ability to manage, influence or guide meaningful change, prioritizing the actions with the greatest potential for long-term impact and continuous improvement.

The plan follows an overarching strategy to mitigate impacts, adapt to changing conditions and enhance sustainability performance across the airport system. This includes reducing emissions, conserving water and energy, protecting natural resources, improving waste practices and preparing infrastructure for climate-driven disruptions. The plan relies on a consistent, Department-wide collaborative approach. Sustainability and resiliency are not treated as standalone initiatives, but as integral elements of how the airports are planned, built and operated both every day and over the long term.

Development of this update was guided by a thoughtful, iterative process that ensures strategic alignment with the City of Phoenix's sustainability goals, industry best practices and global sustainability frameworks. Rooted in the City's sustainability and resiliency commitments, the plan supports and advances actions outlined in the Climate Action Plan (CAP), the Shade Phoenix program, Transportation Electrification Action Plan and Sustainable Purchasing program, among others.[4]

To ensure aviation industry alignment, the Aviation Department referenced guidance from leading organizations including Airports Council International (ACI), the Federal Aviation Administration (FAA) and the Transportation Research Board (TRB), while completing benchmarking research of leading airport systems. These resources informed the performance benchmarks, technical strategies and implementation approaches specifically tailored to the complex needs of the airport system.

4 *City of Phoenix - Environmental Programs*

Aligning Airport Sustainability with Global Goals

The plan also reflects alignment with global sustainability priorities, including the United Nations Sustainable Development Goals (SDGs). Connections were made to SDGs most relevant to airport operations, including responsible consumption (Goal 12), climate action (Goal 13), clean energy (Goal 7) and sustainable cities and communities (Goal 11), among others. This multi-tiered planning approach ensures that the Aviation Department is not only meeting local and regional priorities but also contributing to what matters at a global scale.

	Relevant Sustainable Development Goals	Connection
AIR & CLIMATE	13 CLIMATE ACTION; 11 SUSTAINABLE CITIES AND COMMUNITIES	Reducing carbon emissions from airport operations and improving air quality through climate-smart infrastructure and policies.
ENERGY	7 AFFORDABLE AND CLEAN ENERGY; 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	Increasing energy efficiency, expanding use of renewable energy sources and modernizing energy systems to reduce carbon intensity.
LAND STEWARDSHIP	15 LIFE ON LAND; 11 SUSTAINABLE CITIES AND COMMUNITIES	Protecting local habitats, restoring native landscapes and minimizing ecological impacts on surrounding areas.
WASTE	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Advancing zero-waste goals through diversion, recycling and circular resource management practices.
WATER	6 CLEAN WATER AND SANITATION; 14 LIFE BELOW WATER	Promoting water conservation, efficient use and reuse strategies in a region where water scarcity is a growing challenge.
BUSINESS PRACTICES	8 DECENT WORK AND ECONOMIC GROWTH; 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	Embedding sustainability into procurement, contracting and financial planning to foster economic resilience and innovation.
COMMUNITY	17 PARTNERSHIPS FOR THE GOALS; 3 GOOD HEALTH AND WELL-BEING	Engaging community input, improving equity in access and benefits and building public-private partnerships to achieve shared sustainability.

Plan Organization

The plan is organized around a set of interconnected **focus areas** based on their alignment with key sustainability and resiliency challenges and opportunities within the airport system.

These include Air and Climate, Energy, Land Stewardship, Waste and Water—which address systems central to resource use and environmental impact. Supporting and applying across all of these efforts are the cross-cutting focus areas of Business Practices and Community, that guide how sustainability and resiliency principles are embedded into policies, procurement, decision-making and stakeholder engagement, ensuring a consistent, coordinated approach across every material subject.

Focus Areas

goals

The Aviation Department establishes clear, measurable goals for each focus area that define success and enable progress tracking.

Goals are developed by first aligning with relevant City of Phoenix goals, ensuring consistency with broader municipal objectives. From there, the Aviation Department refines and establishes airport-specific goals based on operational data and the unique environmental and functional characteristics of the airports.

objectives

Each focus area is guided by overarching objectives that speak to long-term sustainability and resiliency intent and are designed to collectively reach the overarching goal.

These objectives are shaped by operational realities and regulatory requirements. These objectives define purpose and direction, guiding the selection of appropriate actions to create long-term, measurable benefits.

actions

Actions are defined to support the achievement of each objective by outlining specific, practical steps the Aviation Department can take across planning, operations, administration and infrastructure.

The Action Matrix in Appendix A outlines specific actions, timelines and responsibilities. These actions are informed by best practices, stakeholder input, technical assessments and feasibility. They are designed to be adaptable, scalable and implementable within defined timeframes, ensuring continual progress toward sustainability and resiliency while supporting the unique demands of each airport.

key actions are often supported by detailed topic-specific action plans, such as:

Sustainable Design Standards

Ensures new facilities are energy- and resource-efficient from concept through operation.

Roadmap to Net Zero Carbon

Sets phased approach for emissions reductions and ultimately achieving net zero carbon.

Solid Waste Management Plan

Outlines strategies to reduce waste generation and increase diversion.

Electric Vehicle Charging Roadmap

Guides the deployment of EV infrastructure to support airport fleet electrification, tenant needs, public access and long-term energy planning.

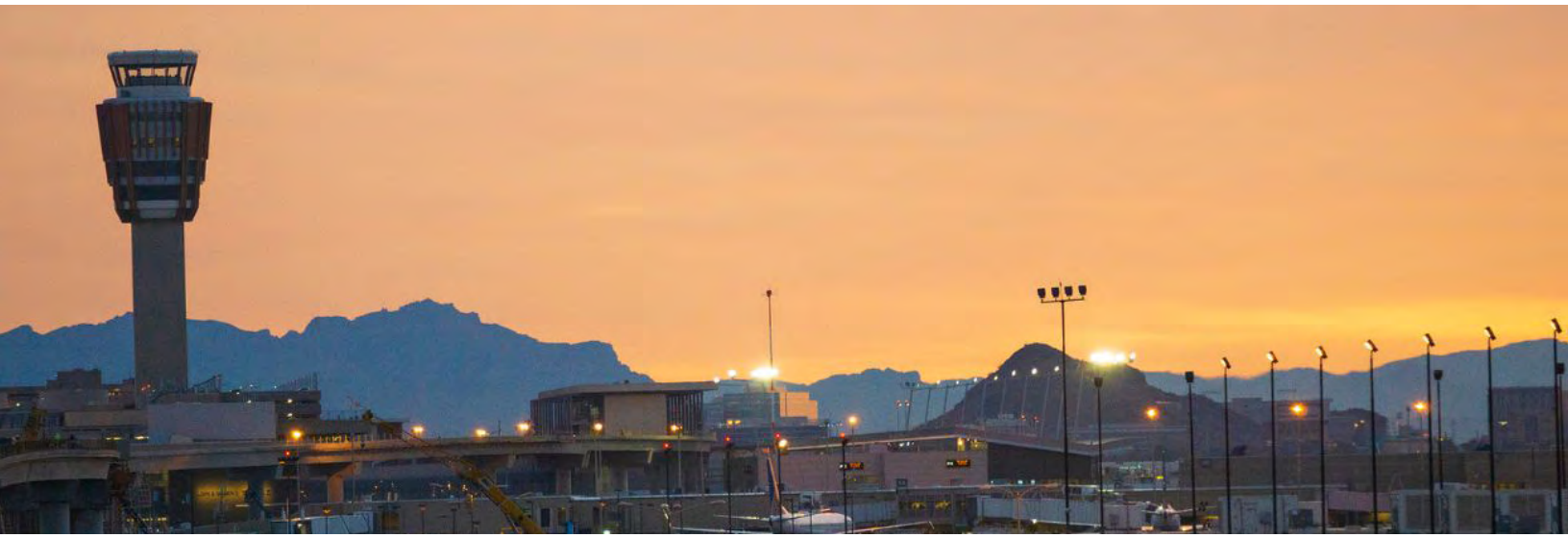
Outreach Plan

Defines priority objectives and initiatives for engagement with each stakeholder group to support enhancing the culture of sustainability and resiliency.

Implementation

To ensure the plan remains relevant and responsive, there is an **implementation** process defined for regular reviews and refinement, allowing for updates alongside changing operational demands, emerging technologies and organizational priorities. Through this dynamic framework, the Aviation Department strengthens its ability to meet current challenges while enabling responsible growth that supports the communities it serves.

FOCUS AREAS



AIR & CLIMATE

Minimize emissions and adapt to changing climate conditions

The Air and Climate focus area addresses one of the most complex challenges facing airport systems today: the need to both mitigate emissions that contribute to local air quality impacts and global climate change as well as adapt to the increasingly severe impacts of a changing climate. The Phoenix region faces extreme heat, persistent air quality challenges and intensifying climate risks that affect both the environment and airport operations. High ozone levels and dust storms contribute to periods of unhealthy air days that impact staff, travelers, and residents.

The Aviation Department generates around 60,000 tons of *carbon emissions* annually from sources including vehicles, equipment and building energy use. Emissions from electricity comprise over 95% of the carbon footprint. Guided by its Roadmap to Net Zero Carbon, the Aviation Department has effectively reduced its carbon footprint over 40% since 2015. With the ability to reduce its emissions and influence those of its business partners, the Aviation Department has a unique opportunity to limit its impact while strengthening regional climate resilience.

CARBON EMISSIONS

Carbon emissions refers to greenhouse gas emissions, including carbon dioxide, methane and nitrous oxides, as well as fluorinated gases. The impacts of greenhouse gases are normalized according to the global warming potential relative to carbon dioxide, expressed as carbon dioxide equivalent (CO_2e).

This focus area approaches these challenges through two intersecting strategies:

Climate Mitigation: To reduce carbon emissions and local air pollutants by improving facility energy performance, transitioning to renewable energy sources, electrifying airport vehicles and ground support equipment and supporting low-emission travel options for passengers and employees. These actions reflect best practices in sustainable aviation while directly supporting improved air quality and aligning with the City of Phoenix Climate Action Plan.

Climate Adaptation: To enhance the ability of airport systems to withstand and recover from the effects of changing climate conditions. This includes designing infrastructure to handle extreme heat, strengthening power reliability, safeguarding indoor air quality and ensuring the safety of employees and travelers during weather-related disruptions. Adaptation strategies minimize risk and help maintain continuity of services under increasingly unpredictable conditions.

By embedding climate action into the core of airport planning and operations, the Aviation Department is enhancing long-term performance, reducing environmental impacts and preparing for continued growth.

goal

Net Zero Carbon
2040

The Aviation Department has established a science-based target in alignment with the United Nation's Intergovernmental Panel on Climate Change. This target is defined as reducing operational Scope 1 and 2 carbon emissions by at least 90% from the 2010 baseline and balancing residual emissions with carbon removals.

objectives

- Measure and strategically manage emissions
- Transition vehicles and equipment to zero or low emission technologies, prioritizing electrification
- Provide infrastructure to support zero or low emission vehicles and equipment
- Improve efficiency and reduce energy demand for vehicles, equipment and aircraft
- Support use of low or zero emission options for all modes of travel
- Reduce emissions from stationary sources
- Build resilience to climate hazards

HIGHLIGHTS

The Aviation Department continues to be recognized globally for its participation in Airports Council International's Airport Carbon Accreditation (ACA) program, where it maintains one of the highest levels of certification for accurately measuring and reducing carbon emissions, while aligning with international climate mitigation ambition.

Completion of the all-electric PHX Sky Train® in late 2022 replaced 72 natural gas-powered shuttle buses, reduced associated emissions by nearly 5,000 tons and alleviated traffic congestion. The PHX Sky Train® runs continuously on a 5-mile dedicated guideway linking the light rail station, parking lots, airport terminals and the rental car center, providing a sustainable mobility option for passengers.

While alternative fuel vehicles comprise nearly 70% of the fleet, The Aviation Department has shifted focus to incorporate zero emission electric vehicles and rapidly expand charging station accessibility in strategic locations for the fleet, employees, business partners and the public.

PHX was the first airport in the world to offer autonomous vehicle ride hailing service, with zero emission vehicles provided by Waymo. The airport also features a Green Curb, which provides passengers a convenient and prominently located designated pickup area at each of the terminals to encourage electric vehicle ride-share trips, further supported by discounts from some rideshare companies.

ENERGY

Transition to renewable energy and minimize energy consumption

Energy is essential to the safe, efficient, and continuous operation of the airport system. It powers lighting, cooling systems and other operations and equipment that keep passengers and cargo moving day and night. As prolonged high temperatures drive up cooling demands and strain power systems, a long-term energy strategy is an essential priority. Increasing energy demands have highlighted the need to ensure airports can not only conserve energy but also avoid outages and recover quickly when one occurs. That means planning for redundant, reliable power sources, hardening infrastructure and integrating on-site energy solutions when feasible.

For the Aviation Department, electricity accounts for nearly 99% of energy use across airport facilities and infrastructure, with only minimal natural gas consumption at PHX and DVT, primarily for restaurant equipment and ancillary heating. Collectively, the airport system consumes approximately 170,000 megawatt-hours of electricity annually, with 6% generated by on-site photovoltaic (i.e., solar) arrays. The remaining demand is met by grid electricity supplied through the Arizona–New Mexico power grid. This regional grid currently sources more than 40% of its electricity from carbon-free energy, including solar, wind, hydro and nuclear, and is supported by ambitious utility goals to expand renewable energy development and enhance long-term grid resilience.

The Energy focus area supports strategies to reduce electricity consumption, improve building performance and expand the use of renewable energy across the airports. It also addresses long-term energy capacity needs, particularly as the Aviation Department expands its use of electric vehicles and equipment, which further tie airport business continuity to the resilience of the power grid and supporting infrastructure. By focusing on efficiency, renewable energy and resilience, this focus area helps future-proof the airport system supporting carbon reduction goals, reducing operational risk and ensuring uninterrupted service for travelers, employees and business partners.

goals

Carbon-free Electricity
30% Energy Use Reduction
2030

In alignment with the City of Phoenix Climate Action Plan, the Aviation Department seeks to reduce the energy use of Aviation Department facilities at least 30% from a 2012 baseline and source 100% of electricity from carbon-free sources by 2030. The City of Phoenix is in the process of updating the energy use goal from an absolute to an intensity reduction goal. With the growth experienced across facilities, the Aviation Department tracks intensity (i.e., energy use per square feet of facilities) as a more accurate indicator of efficiency that factors in development.

objectives

- Monitor and manage energy consumption
- Reduce energy use intensity of facilities
- Design and retrofit facilities for high energy efficiency
- Replace equipment and lighting with efficient alternatives
- Transition to renewable energy sources
- Improve energy system storage, redundancy and diversification

HIGHLIGHTS

Energy-efficient design has been a consistent priority in new and renovated airport facilities as the Aviation Department designs to achieve Silver certification in the Leadership for Energy and Environmental Design (LEED) standard or equivalent. Facilities feature high-performance systems, smart controls, advanced insulation and daylighting strategies to reduce overall energy use while maintaining comfort and safety.

There are 5 megawatts-alternating current of on-site solar arrays in operation with additional rooftop and covered parking area installations underway to expand on-site renewable energy production to 18 megawatts-alternating current while providing shaded areas for travelers and staff.

The Aviation Department conducts energy audits to identify efficiency improvements and reduce energy use across airport facilities. In parallel, a comprehensive Electric Utility Master Plan is being developed to guide long-term planning for power demand, infrastructure upgrades and renewable

In existing buildings, the Aviation Department has implemented a range of energy conservation measures, including high-efficiency motors, upgraded system controls and widespread light emitting diode lighting to reduce energy demand, lower costs and extend equipment life across the airport system.

LAND STEWARDSHIP

Encourage healthy ecosystems while reducing wildlife risks

Responsible land management is essential to the safe, efficient and sustainable operation of the airport system, an understanding that forms the basis of the Land Stewardship focus area. With more than 5,000 acres of land under its management, the Aviation Department plays a critical role in implementing practices that protect natural resources, support desert ecosystems and minimize wildlife-related safety risks.

The Phoenix region is home to one of the world's most ecologically rich desert environments. Its unique landscape supports a wide variety of plants and animals uniquely adapted to heat, drought and intense sunlight. Preserving biodiversity, the variety of life within this landscape, is essential not only to protecting regional ecological integrity, but also to enhancing climate resilience. Healthy ecosystems improve soil function, manage stormwater naturally, enhance carbon sequestration and strengthen the desert's ability to adapt to environmental stressors.

At the same time, the proximity of certain wildlife to active airfields poses safety concerns. The Land Stewardship focus area addresses these risks by integrating wildlife hazard management into landscape planning and land use strategies. This includes maintaining vegetation that reduces attractants, monitoring open spaces and working with specialists to prevent conflicts between wildlife and aircraft.

Landscaping strategies prioritize drought-tolerant, native species, supported by efficient irrigation systems. Restoration strategies and low-maintenance practices are used in undeveloped or naturalized areas, where appropriate. This balanced approach allows the Aviation Department to support biodiversity, conserve water and ensure safe operations.

goal

Incorporate Ecosystem Health Objectives
2030

By 2030, the Aviation Department aims to fully integrate ecosystem health objectives into airport planning, design and land management practices.

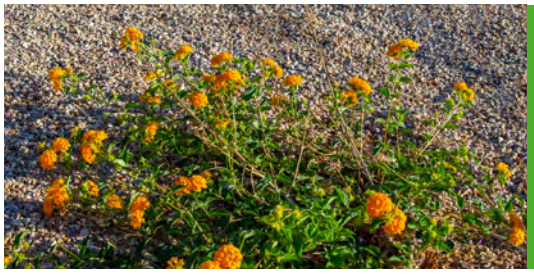
objectives

- Monitor and manage ecosystem health, guided by scientific data
- Support local habitats and biodiversity in landscaping and undeveloped land
- Design and develop property for low impact on ecosystems
- Minimize heat island effects and increase shade availability
- Manage material storage and handling to prevent environmental and health impacts
- Balance wildlife hazard management with other land stewardship objectives

HIGHLIGHTS

In 2024, the Aviation Department finalized conversion of all non-functional turf to drought-tolerant xeriscaping. In total, over 11 acres of turf were converted since 2014, resulting in significant water savings of over 5 million gallons annually.

The Aviation Department landscaping hosts over 28,000 plants and 6,000 trees that are adapted to the desert environment. Manual, low-impact landscaping methods are prioritized.



The 7,000 square foot Sky Garden was converted to a thriving nursery and propagation center to support the landscaping needs on-site. The facility supplies a portion of replacement plants used at PHX.

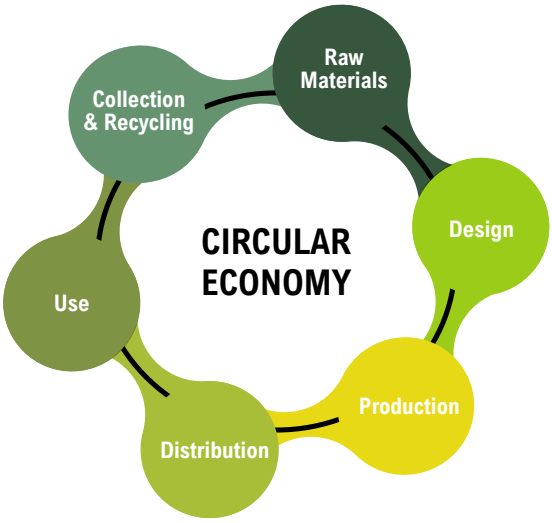
The Aviation Department balances ecosystem health objectives with operational safety needs, supported by a comprehensive Wildlife Hazard Management Plan.

WASTE

Reduce waste generation and promote material circularity

Waste generation is a significant and complex challenge across the aviation industry, with thousands of daily passengers, employees and vendors contributing to a continuous stream of materials ranging from food packaging and single-use plastics to maintenance materials, landscaping waste and construction debris. Waste disposal rates are estimated at around 0.75-1 pound per passenger, with nearly 40% of the waste stream estimated to be recyclable.[5] Left unchecked, this linear, take-make-dispose system can result in significant natural resource use, strain landfills and contribute to carbon emissions.

Since 2015, the Aviation Department has nearly doubled the rate of waste diverted from the landfill with a waste diversion rate consistently over 40%, equating to less than 0.5 pounds per passenger. With 8,000 tons of materials landfilled annually on average, the Aviation Department is taking a forward-looking approach to waste management. This involves actively shifting toward a circular economy, a model focused on reducing waste at the source, designing for reuse, increasing recovery through recycling and composting and ultimately keeping materials in use for as long as possible. This transition is essential not only for environmental stewardship, but also for long-term operational efficiency and cost savings.



The Waste focus area aims to embed **circular economy** principles into every step of the waste cycle, from procurement and packaging to disposal and recovery. Central to this effort is collaboration, both internally and with business partners, concessions, contractors and travelers, to find shared solutions for materials management. The Aviation Department is working to design waste systems that make diversion easy and accessible while promoting education and awareness around responsible consumption.

5 *Airport Cooperative Research Program (ACRP) Synthesis 92: Airport Waste Management and Recycling Practices*

goal

Zero Waste
2050

The Aviation Department is committed to achieving zero waste by 2050, defined as diverting at least 90% of all waste materials from landfills. As an interim milestone, the Aviation Department is focused on achieving at least a 50% waste diversion rate by 2030.

objectives

- Measure and strategically manage materials
- Reduce waste generation from its source
- Collect and process organic materials for generation of compost
- Promote material reuse opportunities
- Improve recycling opportunities and reduce contamination

HIGHLIGHTS

Public and employee areas include widespread access to over 360 recycling bins co-located with waste bins, supporting proper sorting of recyclable materials. Liquid collection stations at security checkpoints support the reuse of beverage containers and reduction of recycling contamination.

Waste diversion efforts are supported by 220 consistent, multilingual messages across terminals, offering guidance through signage, interactive QR codes and airport information channels to help travelers and staff sort materials correctly.

Organic waste collection has significantly expanded, with restaurants and airline clubs diverting 165 tons of food scraps in addition to 500 tons of landscape materials diverted from the landfill annually to be processed into compost by the City of Phoenix Compost Facility.

The Aviation Department works closely with business partners to explore recyclable material options. The use of reusable carts instead of wooden pallets has reduced the need for 28,000 pallets and 630 tons of cardboard annually.

WATER

Protect water resources and minimize water consumption

In the arid Sonoran Desert, Phoenix receives less than eight inches of rainfall annually and depends on increasingly strained water sources like the Colorado and Salt River systems. The region faces prolonged drought, rising temperatures and growing demand, conditions intensified by climate change and continued population growth. As a result, the need to manage water efficiently and responsibly has become essential, especially for large-scale infrastructure like airports that rely on water for daily operations and safety.

The Aviation Department recognizes that water stewardship is vital to long-term resilience. The Aviation Department water use averages 300 million gallons of potable water annually, equating to 7 gallons of water per passenger. This amount is well below the national average for airport facilities, estimated at approximately 15–25 gallons of water per passenger annually.[6]

In addition to addressing water scarcity, the airports must also protect water quality and prepare for more frequent extreme weather. Urban development and impervious surfaces can increase runoff and pollution, while heavy rain events, such as monsoons, pose flooding risks that can disrupt operations and damage infrastructure. Effective water management is no longer only about conservation, it's also about protection and preparedness.

Through the Water focus area, the Aviation Department is working to reduce potable water use, prevent pollution and enhance infrastructure to better manage stormwater. Drought-tolerant landscaping, smart irrigation controls, efficient cooling systems and spill prevention strategies support these objectives in a comprehensive manner. Drainage improvements and stormwater planning also help to mitigate flooding risks and keep both facilities and travelers safe during extreme weather events.

6 *ACRP Report 154: Water Efficiency Management Strategies for Airports*

goal

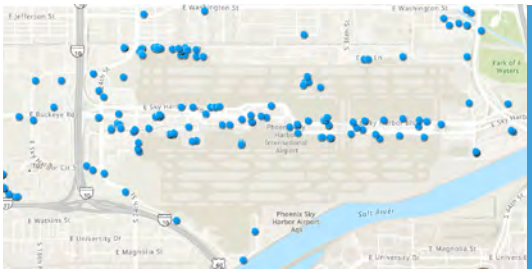
25% Potable Water Use Per Square Foot Reduction
2040

The Aviation Department aims to reduce potable water use by 25% per square foot by 2040 through a combination of increased efficiency, reduced consumption, and the strategic reuse of non-potable water.

objectives

- Monitor and manage water consumption, including leaks
- Design and retrofit facilities to achieve high water efficiency
- Maintain infrastructure, equipment and fixtures to preserve water quality and efficiency
- Transition to alternative water sources for non-potable use
- Manage stormwater drainage capacity to reduce flood risk
- Protect stormwater quality

HIGHLIGHTS

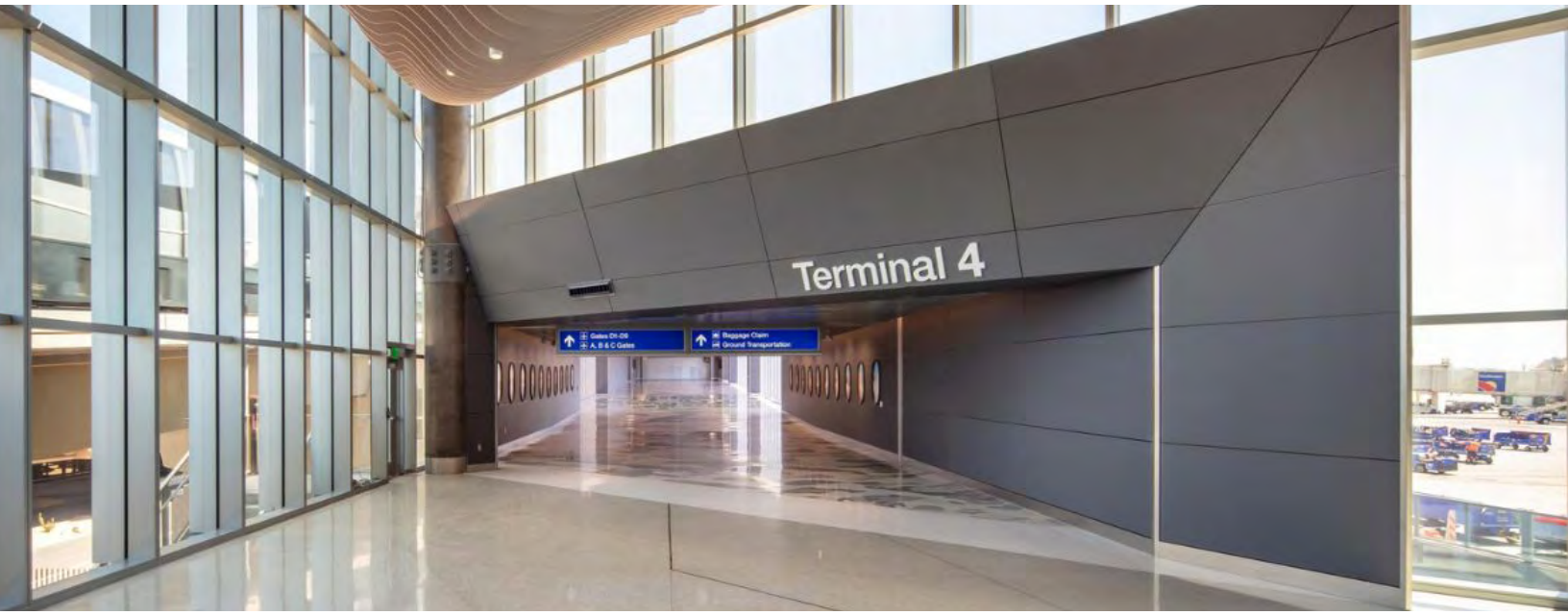


The Aviation Department has implemented data-driven tools to monitor and manage water use, including GIS-based mapping of water meters and backflow prevention systems. These tools support targeted conservation to track water use and identify areas for ongoing improvement.

Cooling towers were equipped with MIOX ion exchange treatment technology that halved the amount of water needed, saving 22 million gallons of water annually by treating the water with fewer chemicals and allowing it to be reused longer.

Landscaped areas feature smart irrigation controls that monitor environmental conditions to only apply water as needed and can detect leaks, automatically shutting off flow to prevent water loss.

The Aviation Department has installed almost 1,600 low-flow WaterSense restroom fixtures in public-facing and airport administrative areas. These fixtures use 20% less water than standard fixtures.



BUSINESS PRACTICES

Integrate sustainability and resiliency into our business practices

Sustainability and resiliency are most effective when they are not confined to standalone initiatives but are instead fully integrated across all business functions. For the Aviation Department, this means embedding sustainability and resiliency decision-making into the day-to-day internal processes and long-term planning strategies that shape how the Aviation Department runs. Whether through budgeting, procurement, governance or business partner coordination, every activity offers a platform to advance sustainability and resiliency goals.

The Business Practices focus area guides the development of consistent and actionable recommendations, requirements and standards to ensure sustainability and resiliency considerations are built into the foundation of how the Aviation Department does business. This includes crafting sustainable procurement language, integrating environmental performance criteria into contracts and policies and setting measurable expectations for internal and external partners.

By developing structured, scalable frameworks within standard business practices, the Aviation Department reduces risk, minimizes environmental impact and ensures that resources are allocated efficiently and responsibly. This integrated approach supports more consistent outcomes across projects and operations, whether large capital programs or everyday facility management tasks.

goal

Increase Integration
Annually

The Aviation Department aims to deepen the integration of sustainability and resiliency into its core business practices, ensuring these values are consistently reflected in policies, procurement, contracts and operations.

objectives

- Develop policies and standards that support our sustainability and resiliency goals
- Incorporate sustainability and resiliency throughout operations
- Enhance administrative processes using sustainability and resiliency principles
- Expand sustainability and resiliency recommendations and requirements for business partners
- Design and construct new and renovated facilities to sustainability and resiliency standards

HIGHLIGHTS

Procurement and contracting practices are central to integrating sustainability and resiliency. The Aviation Department is evaluating and updating its contracts to incorporate sustainability recommendations or requirements and is applying environmentally preferred purchasing policies and minimum qualification criteria when feasible. Revenue Contract Solicitations and business partner agreements are being refined to reflect sustainability goals, helping align vendor and business partner activities with the Aviation Department's ambition.

Design has also been a core focus to ensure facilities are designed to be sustainable and resilient from the start. Over 1.2 million square feet of facilities have been designed to Silver certification or higher in the LEED standard or the Institute for Sustainable Infrastructure's Envision standard, including:

- Sky Train Stage 1 - LEED Gold
- Sky Train Stage 1A - LEED Silver
- Command Center - LEED Gold
- Terminal 3 Modernization - LEED Silver
- Sky Train Stage 2 - Envision Gold
- Terminal 4 South Concourse 1 – LEED Silver

COMMUNITY

Support our community of employees, business partners, passengers and neighbors.

As America's Friendliest Airport®, the Aviation Department understands that strong relationships with employees, business partners, passengers and neighboring communities are key to delivering a welcoming and successful airport experience. The Community focus area builds on this core value by fostering trust, collaboration and mutual benefit among the many people and organizations that interact with or are impacted by the airport system. These stakeholders are central to the Aviation Department's ability to operate effectively, grow responsibly and support regional sustainability and resiliency goals.

Anchored in this commitment, the Aviation Department emphasizes intentional outreach, engagement and collaboration to ensure diverse perspectives are heard and integrated into decision-making. Through regular communication with neighborhood groups and cross-sector coordination with local and regional partners, the Aviation Department works to build stronger connections and address shared challenges. Business partners, including airlines, concessions, vendors, and contractors are critical collaborators in this process. This focus area includes efforts for seeking to align sustainability and resiliency objectives across all airport stakeholders.

goal

Expand Support
Annually

The Aviation Department plans to expand support for employees, business partners, passengers, and neighboring communities by fostering strong relationships and aligning sustainability and resiliency efforts across all stakeholders.

objectives

- Conduct intentional sustainability and resiliency outreach, engagement and collaboration activities
- Collaborate with business partners to achieve shared sustainability and resiliency goals
- Raise awareness and provide sustainability and resiliency education to stakeholders
- Support local schools, businesses and the surrounding Phoenix metro area
- Promote employee and visitor safety, health and wellness

HIGHLIGHTS

The Aviation Department actively engages with employees, business partners, passengers and neighboring communities to build strong relationships and work collaboratively toward shared sustainability and resiliency goals. In 2024, the Green Business Partner Program was launched to encourage airport business partners to voluntarily participate in sustainability initiatives and receive recognition for their efforts. A comprehensive Outreach Plan was also developed to identify stakeholder-specific priorities, supported by educational resources and engagement strategies. The plan outlines tailored initiatives designed to engage each stakeholder group meaningfully.

Community engagement includes ongoing airport sustainability tours, school outreach and participation in STEM-focused events, helping to inspire future generations and raise awareness about the role of sustainability in aviation. In 2024, the City of Phoenix Aviation Department launched the Employee Volunteer Program to promote opportunities to directly serve the local community. Aviation Department staff understand the importance of community engagement on and off the airport campuses and value the opportunity to lend a hand wherever needed most. The Aviation Department also contributes to industry conferences and working groups to share best practices and collaborate on emerging strategies.

Implementation

Effective implementation is essential for transforming sustainability and resiliency goals into measurable, meaningful results. It provides the structure needed to guide decision-making, allocate resources efficiently, coordinate efforts across teams and ensure accountability over time. By clearly defining roles and establishing consistent processes for performance monitoring, reporting and continuous improvement, the implementation approach ensures the plan remains practical, adaptable and drives real progress across the airport system.

Roles and Responsibilities

Successful implementation depends on well-defined roles, shared ownership and cross-functional coordination across internal teams and stakeholders:

AVIATION DEPARTMENT EXECUTIVE TEAM

Provides strategic direction, elevates the importance of sustainability and resiliency at all levels and ensures alignment with the City of Phoenix's broader priorities.

SUSTAINABILITY TEAM

Maintains the plan, leads short and long-term evaluations, compiles performance reporting and supports the development and coordination of actions across Divisions. This team also facilitates internal and external outreach related to sustainability and resiliency.

DIVISIONS AND STAFF

Lead the development, implementation and monitoring of supporting action plans within their areas of expertise. Staff are responsible for embedding sustainability and resiliency into daily operations and projects, including planning, operations, administration and more.

CONTRACTORS, VENDORS AND BUSINESS PARTNERS

Play a vital role for incorporating construction practices, reducing operational impacts, participating in airport-led programs and aligning with procurement and contract requirements or recommendations.

CITY PARTNERS AND EXTERNAL STAKEHOLDERS

Help align policies, support interagency coordination and contribute to shared sustainability and resiliency goals at varying levels.

Performance Monitoring

Progress is measured using key performance indicators and supporting metrics aligned with the plan's goals and objectives. Each Division is responsible for tracking relevant data within their operational area on an ongoing basis. The Sustainability and Resiliency Team consolidates and analyzes this data, compares performance against targets and historical benchmarks and identifies areas for improvement. Subject matter experts are engaged throughout the process to validate data accuracy. This structured, collaborative monitoring process supports transparent internal reporting and drives informed decision-making.

Reporting

The Annual Sustainability and Resiliency Progress Report is the cornerstone of performance reporting for the Aviation Department. Developed by the Sustainability and Resiliency Team, the report compiles action updates and performance data across all focus areas. It provides a comprehensive overview of progress toward goals and helps inform future planning.

To maintain alignment and monitor progress throughout the year, the Aviation Department follows a structured schedule of internal reporting:

- **Quarterly Executive Team Briefings** - Present high-level performance updates, highlight key developments and challenges and share progress toward objectives.
- **Regular Senior Leadership Meetings** - Focus on operational reporting, tracking implementation progress by Divisions and reviewing key metrics to identify emerging needs or adjustments.

This layered reporting structure supports clear communication, fosters accountability and ensures sustainability and resiliency actions remain integrated across the Department year-round.

Plan Review

The plan is a living document, structured to evolve based on changing operational needs, data insights, stakeholder feedback and developments in technology or policy. The Sustainability and Resiliency Management Plan is scheduled for a comprehensive update every 5 years, led by the Sustainability Team in coordination with the Divisions. In the interim, the Action Matrix is reviewed and updated at least annually to ensure alignment with current conditions and priorities. During the review and update process, Divisions contribute progress updates and implementation feedback, while the Sustainability Team evaluates relevance and effectiveness of objectives and actions.

With strong leadership, clear goals and a coordinated strategy for action, measurement and continuous improvement, this Plan serves as a clear roadmap for progress. It translates vision into action, supporting a more adaptive, efficient and responsible airport system that fully embodies the Aviation Department's Future Friendly approach.

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Future Friendly: Aviation Sustainability

For more details on our accomplishments and plans for the future, visit skyharbor.com/about-phx/sustainability

Gresham Smith