



# Centennial Airport Airport Sustainability Plan



Developed on May 25, 2021



**Colorado Airport  
Sustainability Program**



## Acknowledgements

This report was produced using the Colorado Department of Transportation (CDOT) Division of Aeronautics Sustainability Tool Kit (Tool Kit). The Tool Kit provides guidance, instruction, and a simple process for each airport in Colorado to create an Airport Sustainability Plan.

The CDOT Statewide Airport Sustainability Program is a first-of-its-kind project to provide tools and guidance for Colorado airports to prepare customized sustainability plans and identify ways to enhance sustainability within economic, operational, environmental, and social contexts. The program was funded in part by a grant from the Federal Aviation Administration (FAA) as part of its pilot program on sustainability planning.

Gratitude also to the airport implementation team for investing the time and effort to complete the Centennial Airport Sustainability Plan.

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# 1 Introduction to Sustainability

Sustainability is a complex term that has several commonly used definitions depending on the industry. Most definitions of sustainability are based on a concept of a Triple Bottom Line (fiscal health, social responsibility, and environmental stewardship)<sup>1</sup>. For the airport industry, the Triple Bottom Line also includes operational efficiency to emphasize the importance of safety and efficiency at airports. The Airports Council International - North America (ACI-NA) defines sustainability for airports as:

*“a holistic approach to managing an airport so as to ensure the integrity of the Economic viability, Operational efficiency, Natural resource conservation, and Social responsibility (EONS) of the airport”<sup>2</sup>*

Sustainability is an important framework for airports because it represents a truly complete approach to efficiently and responsibly operating the core business in an increasingly complex system while helping identify opportunities for innovation. By applying sustainability principles, airports are using a framework that can help reduce costs, reduce risks, improve performance, build support, and create a positive work environment. Most importantly, this framework also helps airports plan for the future by making sure that the core service is stable while identifying ways to grow.

Traditional business decision-making often uses budgetary or financial considerations as its basis, while neglecting or de-prioritizing other elements that do not have a simple dollar value. Applying the framework of sustainability allows for decision-makers to proactively plan for issues like reducing energy consumption or maintaining good community relations rather than just reacting to issues as they arise. It ensures that these traditionally non-core business issues are considered earlier, if appropriate, and are weighed alongside conventional business ideas. Airport sustainability as part of a business strategy can have many benefits, such as an improved user experience, reduced operational costs, reduced environmental footprints, improved community relations, growth in the regional economy, or opportunities to use new technologies.



**Figure 1.1 EONS Elements of Sustainability (Sustainable Aviation Guidance Alliance, SAGA)**

<sup>1</sup> The “triple bottom line” approach represents the three components of sustainable development: environmental, social, and economic. “Sustainable Development” was conceptualized by the Brundtland Commission of the United Nations in 1987, with the “triple bottom line” first fully expressed in John Elkington’s *Cannibals with Forks: The triple bottom line of 21<sup>st</sup> century business*. Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Gabriola Island, BC: New Society Publishers.

<sup>2</sup> Airport Council International – North America (ACI-NA). Undated. *Airport Sustainability: A Holistic Approach to Effective Airport Management*. <http://www.aci-na.org/static/entransit/Sustainability%20White%20Paper.pdf>. Accessed July 17, 2013.

## 2 Implementing Sustainability at Centennial Airport

There is a wide range of regulations, policies, and local influences that affect how an airport is managed, organized, and operated. Some of these influences are established by the federal government, and others are established locally by the jurisdiction that owns and operates the airport. Further, airports use different types of planning and management approaches to guide airport operations and development. An Airport Sustainability Plan is specific to one airport and enables that airport to incorporate sustainability principles and initiatives into its organization and management practices within the context of these regulations, policies, and local influences.

It is important to ensure that sustainability is applied in a way that takes into account the uniqueness of the airport and its setting, operation, or organization. For instance, an action that might improve the energy efficiency of terminals in a major commercial airport may not be as effective or applicable in a smaller airport that provides less (or no) commercial service. In order to apply sustainability in a way that makes sense for a specific airport's unique characteristics, each Airport Sustainability Plan is created based on the resources available or relevant to an airport and the areas and characteristics that the airport identifies as most important (called focus areas).

Centennial Airport staff have voluntarily prepared this Airport Sustainability Plan as a management tool to comprehensively integrate sustainability concepts into airport planning, management, operations, and development. The plan is structured in a way to allow airport management to capture sustainability practices that can enhance financial viability, improve operational efficiency, conserve natural resources, and express social responsibility. In creating and adopting this Airport Sustainability Plan, the staff of Centennial Airport demonstrate their commitment to integrating sustainability into management decisions at the airport. Airport staff intend to use this plan as a roadmap for implementing sustainability initiatives that are tailored to the airport's size, service, location, and characteristics.

This Airport Sustainability Plan provides the structure to ensure a balanced and sustainable approach to managing its operations and facilities. To formalize the reasoning and importance of creating and following this plan, airport staff adopted this **Sustainability Mission Statement**:

*"The Airport aims to demonstrate financial responsibility without sacrificing the utmost level of safety that has always been at the core of all airport operations, and to continue to promote environmental stewardship and economic development that is beneficial to the airport and the communities that it serves."*

Centennial Airport's Sustainability Mission Statement captures the purpose of Centennial Airport's sustainability program and focuses on the needs and goals unique to the airport.

The Airport Sustainability Plan for Centennial Airport must itself be sustainable and tailored to financial conditions, staff resources, and local environmental and social considerations. Therefore, these factors were taken into account when creating Goals and Initiatives to meet the Sustainability Mission Statement.

### 3 Centennial Airport Sustainability Plan Development

The FAA has been active in promoting sustainability at airports and in 2010 issued guidance for airports to incorporate sustainability as part of their master plans or as individual Airport Sustainability Plans.<sup>3</sup> To facilitate the preparation of Airport Sustainability Plans in the State of Colorado, CDOT Aeronautics secured FAA funding and launched a program to develop a Sustainability Tool Kit that reduces the expense, time, and complexity involved for Colorado airports to create Airport Sustainability Plans.

This Airport Sustainability Plan was developed by Centennial Airport staff using the Sustainability Tool Kit in the Web-Based Information Management System or WIMS<sup>4</sup>. The user-friendly application in WIMS provides airports with a roadmap to develop customized plans that consider and include the following steps:

- ✓ **Developing a Sustainability Mission Statement to guide the philosophy about sustainability at the airport**
- ✓ **Establishing a Baseline Inventory**
- ✓ **Identifying Goals for the Focus Categories and Metrics to measure progress toward achieving Goals**
- ✓ **Identifying Initiatives (implementation actions) that will help the airport to achieve its Goals**
- ✓ **Creating an Implementation Plan for the overall Airport Sustainability Plan and for measuring progress**

This Airport Sustainability Plan is specific to Centennial Airport and represents the airport's characteristics, the valuable input and experience of airport staff, and the short- and long-term Goals that the airport hopes to achieve. To demonstrate commitment to the plan and to implementing sustainability principles at the airport, the Airport Director or Assistant Airport Director will review the plan annually to track and measure progress of the plan's Goals and Initiatives (see Section 7, Plan-Do-Check-Act Approach).

### 4 Airport Background

Airports in the State of Colorado can be funded at three different levels: federal (i.e., FAA), state (i.e., CDOT), and/or local (e.g., counties, municipalities, authorities, associations, private, etc., as the airport sponsor).

Federal funding eligibility applies to those airports that are identified in the *National Plan of Integrated Airport Systems (NPIAS)* which may be eligible to receive grant monies through the FAA's Airport Improvement Program (AIP). The NPIAS identifies those airports included in the national airport system and the role they serve. In the State of Colorado, there are 74 public-use airports of which 49 are identified as NPIAS airports (10 primary, commercial service and 39 non-primary, general aviation).

Centennial Airport serves DENVER and surrounding areas and is classified as a National airport according to the FAA National Asset Report. The airport is owned by Arapahoe County Public Airport

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<sup>3</sup> More information on FAA Sustainability and grant funding can be found online at <http://www.faa.gov/airports/environmental/sustainability/>

<sup>4</sup> WIMS is a web-based "cloud" solution developed by the Division of Aeronautics to help Division and airport staff track and manage the Colorado Discretionary Grant Program, airport capital improvement plans, aviation fuel tax disbursements, and various statewide programs.



Authority and had 334,965 aircraft operations (takeoffs and landings) in 2020. The airport employs approximately 26 employees (full-time equivalent).

Centennial Airport has an air traffic control tower onsite within 1,315 total acres of airport property. Centennial Airport has 3 runway(s), the longest of which is 10,001 feet long and 100 feet wide. There were 880 based aircraft in 2020 and 5 fixed based operator(s) at the airport.

## 5 Sustainability Plan Process

In developing the Airport Sustainability Plan, Centennial Airport staff identified Focus Categories, Goals, Metrics and Initiatives uniquely tailored to the airport. These components provide a framework for moving through the sustainability plan process. These terms are discussed in more detail in the following sections, but are briefly defined below:

**Focus Category:** *Area of interest identified by the airport. Focus Categories narrow the scope of an Airport Sustainability Plan to those elements that are most important and applicable to the airport.*

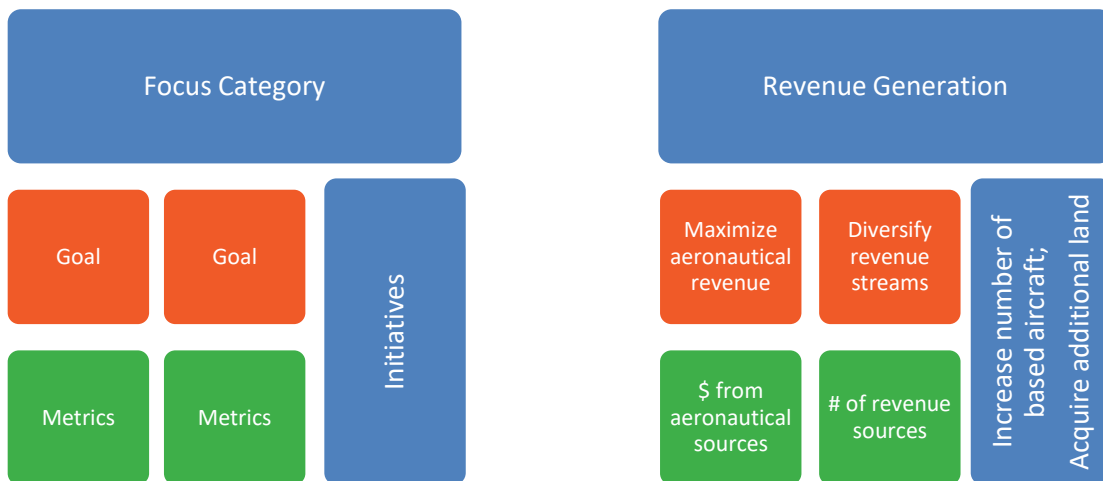
**Goal:** *Statement of a desired result, outcome, or level of attainment. Goals are used to realize the overall vision of the airport. They are organized by Focus Category.*

**Metric:** *Means by which to measure progress in reaching a Goal over time.*

**Initiative:** *Action that an airport might take to reach or make progress toward one or more Goals.*

It is important to understand the relationship among these components and how they provide a comprehensive process for achieving sustainability. For example, if the focus is on generating revenue, a Goal could be to maximize aeronautical revenue. This Goal could be measured in dollars. Increasing the number of based aircraft might be an Initiative (action) to help achieve this Goal. Figure 5.1 shows the relationships between Focus Categories, Goals, Metrics, and Initiatives.

Figure 5.1 Relationship between Focus Categories, Goals, Metrics, and Initiatives



## 6 Focus Categories

Focus Categories are broad areas of interest on which an airport can focus with regard to sustainability. These may be problem areas for an airport (i.e., expenses or wildlife strikes) or they may be areas where an airport's performance could be better or warrants recognition for its efforts. Focus Categories make it easier to organize Sustainability Goals and Initiatives and to identify where an airport can find the greatest benefits.

Focus Categories are organized within the four elements of sustainability identified for airports and the aviation industry: **Economic Vitality**, **Operational Efficiency**, **Natural Resource Conservation**, and **Social Responsibility**. The Sustainability Tool Kit organized 15 Focus Categories within these elements to guide the development of your Airport Sustainability Plan. The Focus Categories are briefly described below:

### 6.1 Economic Vitality

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#### 6.1.1 Revenue Generation

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Airport financial stability is crucial to an airport's long-term viability and independence. Airport finance includes all revenue and expenditures associated with operating, maintaining, and improving the facility. Sustainability Goals related to the Revenue Generation Focus Category involve analysis of financial health, revenue sources, and revenue reliability, along with factors like number of full-time employees, based aircraft, and operations.

#### 6.1.2 Expense Generation

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Airport facilities operate under a variety of regulatory and operational constraints that limit the flexibility in expenses and opportunities to cut costs. Responsibly reducing airport operating expenses provides the dual benefit of improving the airport's overall financial standing, as well as providing the airport with supplemental funding with which to advance other cost-saving or sustainable Initiatives.

#### 6.1.3 Economic Development

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Economic development enables the airport's overall growth financially, operationally, and physically. Goals within the Economic Development Focus Category emphasize maximizing operations, number of jobs supported, number of users served, and overall strength and reliability of airport characteristics. Sustainable economic development supports the longevity of the airport and provides a valuable asset to the community and local economy.

### 6.2 Operational Efficiency

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#### 6.2.1 Operations and Maintenance

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The majority of airport staff time and financial resources are dedicated to the continued operation and maintenance of the airport. Considerable effort is expended to keep the airport running and improve the operational efficiency of airport assets for tenants, customers, and the surrounding community. Focusing on operations and maintenance presents a significant opportunity to incorporate sustainable practices into regular airport activities with a direct and measurable positive impact. Goals tied to

operations and maintenance involve improving the overall functionality of the airport and emphasize improving aircraft operations, streamlining maintenance activities, and ensuring continued safety and service performance.

### 6.2.2 **Asset Management**

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Sustainable construction and investment in land, capital, and human resources can contribute to a thriving airport and community. Goals within the Asset Management Focus Category are centered on efficiently managing the airport's facilities and employees.

### 6.2.3 **Business Operations**

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The Business Operations Focus Category captures Goals and activities that enhance the airport's economic position and competitive advantages. Actions to establish business partnerships, secure long-term operating arrangements, improve the attractiveness of the airport for business, or strengthen the airport's revenue streams all serve to enhance business operations. Incorporating sustainability principles within the business operations of an airport maximizes efficiency and allows for multiple elements to be factored into decision-making.

## 6.3 **Natural Resources**

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### 6.3.1 **Energy**

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Energy is an important sustainability issue for an airport because reducing electricity, natural gas, and other fuel consumption can improve air quality, reduce greenhouse gas emissions, and increase cost savings.

### 6.3.2 **Water**

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Preserving water quality and reducing water consumption are important issues across Colorado. Actions to reduce potable water consumption at airports offer opportunities to decrease both environmental and financial impacts on the airport. In addition, surface and ground water can be better protected from fuel and other spills and activities, such as aircraft de-icing, through improved stormwater and construction management practices.

### 6.3.3 **Waste**

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Airports have multiple financial and environmental incentives to reduce total waste generated by airport activities and for users to increase the amount of waste diverted to recycling facilities. Reductions in purchasing, waste hauling, and regulatory fees can trim overall operating expenses, and initiating programs to improve material reuse and recycling can provide significant opportunities for positive community relations, grant funding, and corporate partnerships.

### 6.3.4 **Climate and Air Quality**

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Greenhouse gas emissions have local and global impacts; consequences can be felt with stronger storm events resulting from climate change and air quality impacts from localized emissions. This Focus Category examines ways to reduce greenhouse gas emissions from airport facilities to reduce impacts on climate change and improve air quality.

### 6.3.5 Natural Environment

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Being mindful of how airport activities and projects affect natural resources can reduce related conflicts and can contribute to overall sustainability. This Focus Category includes Goals related to avoiding wildlife strikes and minimizing negative environmental impacts on surroundings uses.

## 6.4 Social Responsibility

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### 6.4.1 Community

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Airports are complex businesses influenced by a wide variety of stakeholders, including federal and state agencies, local governments, community members, employees, tenants, and airport users. This category includes Goals related to outreach, education, airport and community values, and local community relations that can enhance the value (and perception of that value) of the airport in the community.

### 6.4.2 Airport User

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For an airport to remain successful, it is important to optimize user experiences at the airport. The Airport User Focus Category looks at improving relationships with airport users, major regional businesses, businesses that rely on air travel or traffic, and businesses that rely on the airport for core business services.

### 6.4.3 Employees

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The Employees Focus Category looks at the airport's internal worker satisfaction, work environment, and training and support structures. Critical to the successful operation and growth of airports, employees of the airport and airport tenants can significantly influence the success or failure of many other airport Initiatives. Goals related to improving relationships and investing in airport and airport tenant employees are foundational for improving overall airport sustainability and creating a stronger and more resilient operation.

### 6.4.4 Noise

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Airport noise is a common impact of airport operations and can have a potentially negative impact on both the natural environment as well as the human environment. The Noise Focus Category includes Goals that take into consideration noise-related issues and land use compatibility. Regular and positive coordination with surrounding communities, affected neighbors, and stakeholders regarding potential noise issues help to maintain good relations in the community.

Because airports can vary drastically in size and complexity, they often have different priorities. For instance, energy consumption may be of importance for one airport, but less so for another. In developing this plan, Centennial Airport staff identified Focus Categories they consider especially important and that address the unique circumstances at the airport (see **Table 6.1**). These Focus Categories form the content of the baseline inventory and help group and organize sustainability Goals and Initiatives for the airport.

Table 6.1 Focus Categories

Economic Vitality		Operational Efficiency		Natural Resources		Social Responsibility	
<input checked="" type="checkbox"/>	Revenue Generation	<input checked="" type="checkbox"/>	Asset Management	<input checked="" type="checkbox"/>	Energy	<input checked="" type="checkbox"/>	Airport User
<input checked="" type="checkbox"/>	Economic Development	<input checked="" type="checkbox"/>	Operations and Maintenance	<input checked="" type="checkbox"/>	Water	<input checked="" type="checkbox"/>	Community
<input checked="" type="checkbox"/>	Expense Reduction	<input checked="" type="checkbox"/>	Business Operations		Climate and Air Quality	<input checked="" type="checkbox"/>	Employees
				<input checked="" type="checkbox"/>	Waste	<input checked="" type="checkbox"/>	Noise
				<input checked="" type="checkbox"/>	Natural Environment		

## 7 Goals and Metrics

Sustainability Goals are measurable targets that Centennial Airport staff are seeking to achieve through their decision-making and actions. The selection of Sustainability Goals is dependent upon the aspirations and needs of the airport, which are largely driven by its characteristics, interests, outside pressures, and many other issues. Each Goal is tied to a specific Focus Category; however, some Goals may arguably fall under more than one Focus Category. Each Goal identified in the following sections provides a broad aspirational directive to help airport staff achieve the Sustainability Mission Statement.

For each Goal in this plan, Centennial Airport staff assigned a priority level, a unit of measurement (metrics), a frequency of measurement, and a current status. Some of the Metrics may be quantitative (for example, kWh of electricity), and some may be more qualitative (for example, does the airport consistently engage with the community - yes/no). Metrics were defined for each Goal so that progress can be tracked over time. This is especially useful to determine if ongoing sustainability efforts are successful or effective. Some Goals may include more than one type of Metric. For example, a reduction in energy usage can be tracked by usage (kWh) or cost of energy (\$) or both.

Table 7.1 provides a summary of Centennial Airport’s specific Goals organized according to Focus Categories.

Table 7.1 Goal Summary

Goal	Focus Category	Priority	Unit of Measure	Measurement Frequency	Status	Comments (If any)
1. Enhance sustainability practices for all airport operations and maintenance, administration, procurement, design/construction/post-construction.	Operational Efficiency - Asset Mgmt; Operational Efficiency - Business Ops; Operational Efficiency - Ops Maintenance	Medium	N/A	Annually	Planned	
2. Enhance the user experience.	Social - Airport User; Social - Community	Medium	Number of...	Annually	Planned	
3. Establish the airport as a local, statewide, and/or national leader of sustainability practices.	Social - Airport User; Social - Community	Medium	N/A	Annually	Planned	
4. Improve on-site stormwater management practices to improve stormwater runoff quality.	Natural Resources - Water; Operational Efficiency - Ops Maintenance	High	Number of...	Annually	In Progress	Unit of Measure: # of benchmark exceedences 8/16/17 - Continuing to monitor benchmark exceedences. Relocated sampling points to better represent stormwater from airport industrial areas.
5. Improve the natural environment on and around the airport.	Natural Resources - Natural Environment	Medium	N/A		In Progress	
6. Increase aeronautical and non-aeronautical revenue.	Operational Efficiency - Business Ops; Economic Vitality - Revenue Generation; Economic Vitality - Economic Development	High	Dollars	Annually	In Progress	
7. Increase land use compatibility in the vicinity of the airport.	Social - Community; Social - Noise	Medium	N/A	Annually	In Progress	
8. Increase the amount of waste material diverted to recycling.	Natural Resources - Waste; Economic Vitality - Expense Reduction	Low	Cubic Yards	Annually	Not Started	

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9.	Promote employee wellbeing to improve productivity and efficiency.	Social - Employees	Medium	Years	Annually	Planned	
10.	Reduce consumption of electricity generated by non-renewable sources.	Natural Resources - Energy; Economic Vitality - Expense Reduction	High	kWh	Annually	In Progress	
11.	Reduce outdoor water consumption (i.e., irrigation, plane/vehicle washing, landscaping, other maintenance).	Natural Resources - Water; Economic Vitality - Expense Reduction	Medium	kGal	Annually	Planned	
12.	Reduce the use of hazardous materials and the generation of hazardous wastes.	Natural Resources - Waste	High	N/A		In Progress	

## 8 Initiatives

Sustainability Initiatives are the actions taken that are designed to move the airport toward achieving its Goals. Initiatives come in many forms, from implementing a specific project (such as upgrading lighting), to creating a program (such as employee training), to changing a long-term practice (such as how the airport collects revenue). The purpose of an Initiative is to make progress toward reaching or maintaining one or more Sustainability Goals.

Centennial Airport staff have identified specific Initiatives (or actions), that they will take to achieve the Sustainability Goals identified in this Airport Sustainability Plan. For each Initiative, Centennial Airport staff have assigned a person responsible for overseeing the Initiative, an estimated target completion date, an expected level of effort (low, medium, high), a general cost rating, and potential funding source(s). As Sustainability Initiatives are completed, refined, or suspended, airport staff will track and monitor progress toward meeting the Sustainability Goals in this plan.

In addition to the Initiatives built into the Sustainability Tool Kit, Centennial Airport staff were provided various resources for identifying alternative Initiatives, including the Sustainable Aviation Guidance Alliance (SAGA) database, Envision Sustainability Infrastructure Rating System, and US Green Building Council (USGBC) Leadership in Energy & Environmental Design (LEED) program.

The Centennial Airport’s Initiatives are listed below in **Table 8.1**, grouped by Focus Category and by Goal. For a summary of all Initiatives, Focus Categories, Goals, and Metrics, see Section 9, *Implementation*.

### 8.1 Economic Vitality – Revenue Generation

GOAL: Increase aeronautical and non-aeronautical revenue.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Develop and implement new marketing strategies to increase percentage of rented land/ improvements/ facilities square footage/ non-aeronautical uses.	Mike Fronapfel	8/17/2018	Medium		Airport Funding
Explore opportunities to lease land and facilities for temporary use (i.e., conference room/business center in the new Administration building)/ special events.	Gina Conley	12/31/2020	Medium		Airport Funding
Explore the possibility of mineral extraction/ solar farms/ other projects on residual lands that generate revenue.	Cameron Hallock	8/16/2017	Medium		Airport Funding
Partner with energy firms to consider renewable energy projects on residual lands that offset airport costs or generate revenue.	Mike Fronapfel	12/31/2022	Medium		



## 8.2 Economic Vitality – Expense Reduction

GOAL: Increase the amount of waste material diverted to recycling.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Investigate increasing the number of recycling bins in strategic locations and improve signage directly adjacent that clearly identifies what can and cannot be recycled.	Gina Conley	12/31/2021	Low		Airport Funding
Recycle/Reuse 100% of millings produced during the Runway 17R/35L rehab and midfield runup project in the summer of 2022.	Lorie Hinton	12/31/2022	High	\$12,000,000	Federal Grants

GOAL: Reduce consumption of electricity generated by non-renewable sources.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Explore LEED construction designs for the new Administration building.	Cameron Hallock	5/1/2018	Medium		Airport Funding
Investigate viability of renewable energy incentives for new Airport development.	Mike Fronapfel	12/31/2022	Medium		Airport Funding
Replace ramp lights with LED	Lorie Hinton	12/31/2022	Medium		
Upgrade 100% of airfield lighting to LED	Lorie Hinton	12/31/2020	Medium		Airport Funding
Upgrade 60% of airfield lighting to LED.	Lorie Hinton	10/1/2016	Medium	\$125,000	Airport Funding

GOAL: Reduce outdoor water consumption (i.e., irrigation, plane/vehicle washing, landscaping, other maintenance).					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Consider using non-potable, raw water for outdoor irrigation where it is available.	Mike Fronapfel	12/31/2020	Medium		
Replace turf areas with conservation landscaping using native plants to reduce water, fertilizer, and mowing	Gina Conley	12/31/2022	Medium		Airport Funding

### 8.3 Economic Vitality – Economic Development

GOAL: Increase aeronautical and non-aeronautical revenue.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Develop and implement new marketing strategies to increase percentage of rented land/ improvements/ facilities square footage/ non-aeronautical uses.	Mike Fronapfel	8/17/2018	Medium		Airport Funding
Explore opportunities to lease land and facilities for temporary use (i.e., conference room/business center in the new Administration building)/ special events.	Gina Conley	12/31/2020	Medium		Airport Funding
Explore the possibility of mineral extraction/ solar farms/ other projects on residual lands that generate revenue.	Cameron Hallock	8/16/2017	Medium		Airport Funding
Partner with energy firms to consider renewable energy projects on residual lands that offset airport costs or generate revenue.	Mike Fronapfel	12/31/2022	Medium		

### 8.4 Operational Efficiency – Operations and Maintenance

GOAL: Enhance sustainability practices for all airport operations and maintenance, administration, procurement, design/construction/post-construction.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Create an Environmental Management System (EMS) to reduce the airport's environmental impact and increase operating efficiency.	Gina Conley	12/31/2021	Medium		

GOAL: Improve on-site stormwater management practices to improve stormwater runoff quality.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Continue tenant education and awareness efforts regarding stormwater BMPs (i.e., annual training and quarterly inspections).	Gina Conley	12/31/2022	Medium		Airport Funding
Investigate and implement opportunities to mitigate deice runoff issues	Gina Conley	12/31/2023	High		Airport Funding

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Investigate usage of a device fee to be earmarked for stormwater management improvements.	Lorie Hinton	12/31/2022	Medium		Airport Funding
Relocate storm water sampling locations to better represent storm water from airport industrial areas.	Cameron Hallock	6/5/2017	Medium		Airport Funding
Test proprietary carbon media for effectiveness in treating glycol runoff in storm water in order to reduce impact on environment.	Lorie Hinton	5/31/2018	Medium	\$60,000	Airport Funding; Private
Use drones to conduct pond inspections to more efficiently inspect for discrepancies and improve storm water quality.	Mike Fronapfel	12/31/2020	Medium		

### 8.5 Operational Efficiency – Asset Management

GOAL: Enhance sustainability practices for all airport operations and maintenance, administration, procurement, design/construction/post-construction.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Create an Environmental Management System (EMS) to reduce the airport's environmental impact and increase operating efficiency.	Gina Conley	12/31/2021	Medium		

### 8.6 Operational Efficiency – Business Operations

GOAL: Enhance sustainability practices for all airport operations and maintenance, administration, procurement, design/construction/post-construction.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Create an Environmental Management System (EMS) to reduce the airport's environmental impact and increase operating efficiency.	Gina Conley	12/31/2021	Medium		

GOAL: Increase aeronautical and non-aeronautical revenue.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
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## Centennial Airport Sustainability Plan

Develop and implement new marketing strategies to increase percentage of rented land/ improvements/ facilities square footage/ non-aeronautical uses.	Mike Fronapfel	8/17/2018	Medium		Airport Funding
Explore opportunities to lease land and facilities for temporary use (i.e., conference room/business center in the new Administration building)/ special events.	Gina Conley	12/31/2020	Medium		Airport Funding
Explore the possibility of mineral extraction/ solar farms/ other projects on residual lands that generate revenue.	Cameron Hallock	8/16/2017	Medium		Airport Funding
Partner with energy firms to consider renewable energy projects on residual lands that offset airport costs or generate revenue.	Mike Fronapfel	12/31/2022	Medium		

### 8.7 Natural Resources – Energy

GOAL: Reduce consumption of electricity generated by non-renewable sources.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Explore LEED construction designs for the new Administration building.	Cameron Hallock	5/1/2018	Medium		Airport Funding
Investigate viability of renewable energy incentives for new Airport development.	Mike Fronapfel	12/31/2022	Medium		Airport Funding
Replace ramp lights with LED	Lorie Hinton	12/31/2022	Medium		
Upgrade 100% of airfield lighting to LED	Lorie Hinton	12/31/2020	Medium		Airport Funding
Upgrade 60% of airfield lighting to LED.	Lorie Hinton	10/1/2016	Medium	\$125,000	Airport Funding

### 8.8 Natural Resources – Water

GOAL: Improve on-site stormwater management practices to improve stormwater runoff quality.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source

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Continue tenant education and awareness efforts regarding stormwater BMPs (i.e., annual training and quarterly inspections).	Gina Conley	12/31/2022	Medium		Airport Funding
Investigate and implement opportunities to mitigate deice runoff issues	Gina Conley	12/31/2023	High		Airport Funding
Investigate usage of a deice fee to be earmarked for stormwater management improvements.	Lorie Hinton	12/31/2022	Medium		Airport Funding
Relocate storm water sampling locations to better represent storm water from airport industrial areas.	Cameron Hallock	6/5/2017	Medium		Airport Funding
Test proprietary carbon media for effectiveness in treating glycol runoff in storm water in order to reduce impact on environment.	Lorie Hinton	5/31/2018	Medium	\$60,000	Airport Funding; Private
Use drones to conduct pond inspections to more efficiently inspect for discrepancies and improve storm water quality.	Mike Fronapfel	12/31/2020	Medium		

### GOAL: Reduce outdoor water consumption (i.e., irrigation, plane/vehicle washing, landscaping, other maintenance).

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Consider using non-potable, raw water for outdoor irrigation where it is available.	Mike Fronapfel	12/31/2020	Medium		
Replace turf areas with conservation landscaping using native plants to reduce water, fertilizer, and mowing	Gina Conley	12/31/2022	Medium		Airport Funding

## 8.9 Natural Resources – Waste

### GOAL: Increase the amount of waste material diverted to recycling.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Investigate increasing the number of recycling bins in strategic locations and improve signage directly adjacent that clearly identifies what can and cannot be recycled.	Gina Conley	12/31/2021	Low		Airport Funding

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Recycle/Reuse 100% of millings produced during the Runway 17R/35L rehab and midfield runup project in the summer of 2022.	Lorie Hinton	12/31/2022	High	\$12,000,000	Federal Grants
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GOAL: Reduce the use of hazardous materials and the generation of hazardous wastes.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Replace nozzles on ARFF equipment that allows equipment to be tested without releasing foam	Lorie Hinton	12/31/2021	High		State Grants

### 8.10 Natural Resources – Natural Environment

GOAL: Improve the natural environment on and around the airport.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Implement an apiary to promote sustainability by increasing the pollinator species that are imperative to our community and environment.	Gina Conley	4/30/2019	Medium	\$500	Airport Funding

### 8.11 Social Responsibility – Community

GOAL: Enhance the user experience.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Improve signage at the airport for easier user navigation to improve wayfinding and decreased traffic issues.	Gina Conley	12/31/2022	Medium	\$250,000	Airport Funding

GOAL: Establish the airport as a local, statewide, and/or national leader of sustainability practices.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Achieve bronze status in the Colorado Department of Health and Environment Environmental Leadership Program.	Dylan Heberlein	10/9/2018	Medium		
Achieve gold status in the Colorado Department of Health and Environment Environmental Leadership Program.	Gina Conley	12/31/2022	Medium		

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Achieve silver status in the Colorado Department of Health and Environment Environmental Leadership Program.	Dylan Heberlein	12/31/2019	Medium		
Issue website updates to local residents, businesses, libraries, and the city hall that discuss construction progress, airport updates, events, facts, and/or other information.	Deborah Smith	12/31/2022	Medium		

### GOAL: Increase land use compatibility in the vicinity of the airport.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Continue working relationships with the local community leadership to reduce potential for development of non-compatible land uses by meeting with each municipality to review the airport land use guidelines.	Rachel Keller	12/31/2022	Medium		Airport Funding
Continue working with community members, elected officials, the FAA, and the CACNR on noise mitigation.	Rachel Keller	12/31/2022	High		Airport Funding
Investigate viability of acquiring land and restrictive covenants to ensure land use compatibility.	Mike Fronapfel	12/31/2022	Medium		Airport Funding
Issue website updates to local residents, businesses, libraries, and the city hall that discuss construction progress, airport updates, events, facts, and/or other information.	Deborah Smith	12/31/2022	Medium		
Update Noise Exposure Maps.	Aaron Repp	10/15/2016	Medium	\$515,000	Airport Funding; Federal Grants

## 8.12 Social Responsibility – Airport User

### GOAL: Enhance the user experience.

Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Improve signage at the airport for easier user navigation to improve wayfinding and decreased traffic issues.	Gina Conley	12/31/2022	Medium	\$250,000	Airport Funding

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GOAL: Establish the airport as a local, statewide, and/or national leader of sustainability practices.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Achieve bronze status in the Colorado Department of Health and Environment Environmental Leadership Program.	Dylan Heberlein	10/9/2018	Medium		
Achieve gold status in the Colorado Department of Health and Environment Environmental Leadership Program.	Gina Conley	12/31/2022	Medium		
Achieve silver status in the Colorado Department of Health and Environment Environmental Leadership Program.	Dylan Heberlein	12/31/2019	Medium		
Issue website updates to local residents, businesses, libraries, and the city hall that discuss construction progress, airport updates, events, facts, and/or other information.	Deborah Smith	12/31/2022	Medium		

### 8.13 Social Responsibility – Employees

GOAL: Promote employee wellbeing to improve productivity and efficiency.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source
Explore design features in new administration building to promote employee wellness such as lighting, stand up desks, exercise room, sleeping quarters for snow crews.	Gina Conley	12/31/2019	Medium		Loan
Include a wellness center within the new Aviation Community and Administration Facility	Gina Conley	12/31/2020	Medium		

### 8.14 Social Responsibility – Noise

GOAL: Increase land use compatibility in the vicinity of the airport.					
Initiatives(s) Linked to this Goal	Responsible Person	Target Completion Date	Level of Effort	Estimated Cost	Funding Source



Continue working relationships with the local community leadership to reduce potential for development of non-compatible land uses by meeting with each municipality to review the airport land use guidelines.	Rachel Keller	12/31/2022	Medium		Airport Funding
Continue working with community members, elected officials, the FAA, and the CACNR on noise mitigation.	Rachel Keller	12/31/2022	High		Airport Funding
Investigate viability of acquiring land and restrictive covenants to ensure land use compatibility.	Mike Fronapfel	12/31/2022	Medium		Airport Funding
Issue website updates to local residents, businesses, libraries, and the city hall that discuss construction progress, airport updates, events, facts, and/or other information.	Deborah Smith	12/31/2022	Medium		
Update Noise Exposure Maps.	Aaron Repp	10/15/2016	Medium	\$515,000	Airport Funding; Federal Grants

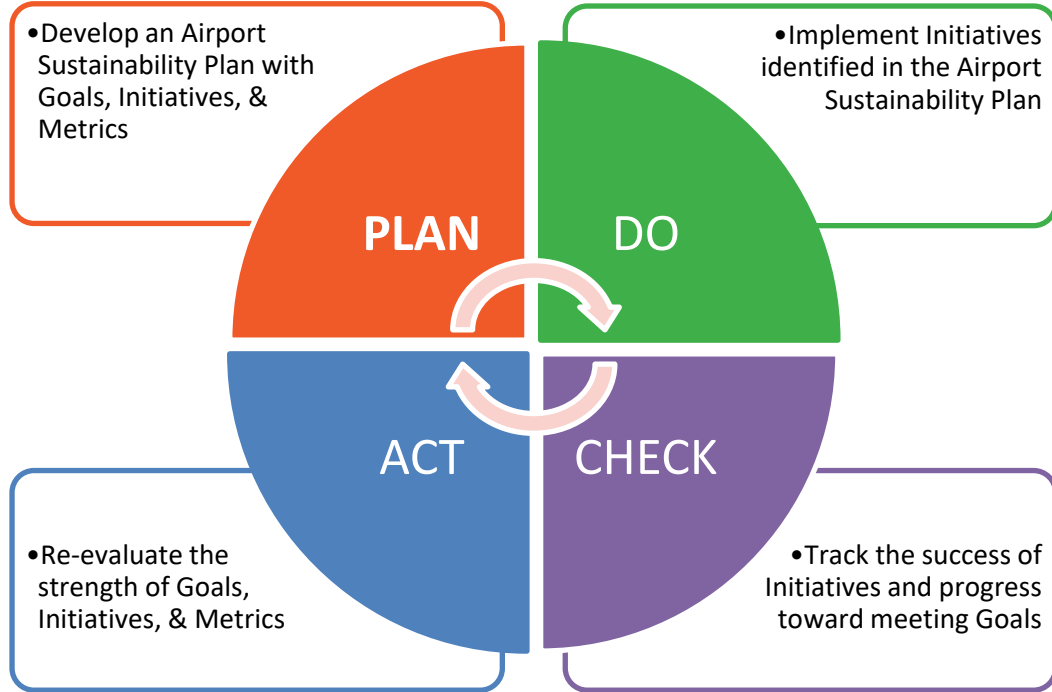
## 9 Implementation

### 9.1 Plan-Do-Check-Act Approach

Centennial Airport staff are employing the Plan-Do-Check-Act approach to implement their sustainability efforts. This is a reliable implementation process to help ensure that the Initiatives identified in this Airport Sustainability Plan are put into action. The process also provides a framework for airport staff to monitor and adjust the plan to find the most effective or reliable approach in the future.

In alignment with the Plan-Do-Check-Act approach, airport staff have initiated the planning step for sustainability integration by developing this plan. Next, the airport staff will implement specific initiatives (Do), will track the outcome and progress of these initiatives (Check), and will adjust or re-evaluate the sustainability approach based on the results (Act). **Figure 9.1** illustrates this approach.

Figure 9.1 Airport Sustainability Plan Sustainability Implementation Approach



### 9.1.1 Planning for Sustainability (Plan)

Centennial Airport staff created this Airport Sustainability Plan to define sustainability, identify sustainability Focus Categories, present baseline information, select Goals with associated metrics, and adopt Initiatives. This planning process is critical because it serves as the framework for the airport’s sustainability program and determines the degree to which sustainability efforts are successful.

#### 9.1.1.1 Sustainability Team

Sustainability influences a wide range of airport activities and practices. To effectively implement a sustainability program, Centennial Airport staff developed this plan via direct input and support from airport personnel. Gina Conley is the person responsible for developing, implementing, reporting, and improving this plan. She is supported by several additional airport staff with knowledge of specific operational fields. Supporting staff include:

- Aaron Repp
- Cameron Hallock
- Deborah Smith
- Dylan Heberlein
- Gina Conley
- Lorie Hinton
- Mike Fronapfel
- Rachel Keller

### 9.1.2 Executing the Airport Sustainability Plan (Do)

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Centennial Airport staff assigned one airport staff member to be responsible for implementing and verifying each Initiative. The responsible staff member is not necessarily expected to achieve full implementation alone, but should be the manager and driver of that Initiative.

Airport staff should hold regular internal meetings to review the Action Plan (Table 9.1), provide progress updates on various Initiatives, identify new opportunities, and coordinate assistance. Any decisions will be documented as part of maintaining and updating the Airport Sustainability Plan.

Airport staff will execute the actions in this plan with the aim of making progress toward achieving its Sustainability Goals. By implementing this Airport Sustainability Plan, the airport will be developing a culture of sustainability and will begin to reshape the core practices and processes at the airport to reflect a stronger consideration for long-term sustainability.

### 9.1.3 Checking Sustainability Progress (Check)

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As most airports have limited financial and staffing resources, Centennial Airport staff will monitor and track Initiatives to the best extent possible. Monitoring and tracking of Initiatives is not intended to be exhaustive, but will be sufficiently detailed to allow the airport to evaluate the success and progress of Initiatives and Goals. For example, if an Initiative is to install new energy efficient lighting, monitoring utility bills should indicate reduced electricity consumption and operating costs that the airport can track as a net benefit toward its energy efficiency and financial Goals. Even if airport staff find that an Initiative is not producing an expected result, the result will be tracked so that the plan can be revised to eliminate or revise that Initiative or the airport can identify an alternative Initiative.

The Sustainability Tool Kit stores all annual data and metrics for each year that Centennial Airport provides information and is a helpful mechanism for tracking and evaluating success. Airport staff should produce regular reports to provide status updates on the Initiatives, as well as the overall implementation of the Airport Sustainability Plan. The progress reports should contain a narrative description of the reporting period's activities; an update for each of the Initiatives in the Action Summary; and a section noting any particular challenges, difficulties, or barriers that airport staff believe are impeding the implementation of any specific Initiative. Centennial Airport staff will share these reports with CDOT Aeronautics to help the agency identify opportunities for collaboration, funding programs, or areas of needed assistance.

### 9.1.4 Learning From and Improving Implementation (Act)

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This Airport Sustainability Plan is a living document, meaning that after planning, implementation, and tracking, Centennial Airport staff will revise the plan to provide even better ways to address sustainability moving forward. In revising its Airport Sustainability Plan, airport staff will consider the question, "What did we learn and how can we do it better next time?" They will identify aspects of the process that can be improved; review the Focus Categories, Goals, and Initiatives; and process the Metrics used to monitor and measure results to determine what changes should be made to the different components of this plan. Airport staff will conduct this periodic review and update the Airport Sustainability Plan as necessary, which should include annual management review and approval.

All of the updates and revisions will be recorded in WIMS to help ensure consistent implementation and to monitor all prior considerations, actions, and reasoning behind any updates. According to the Implementation Commitment, Gina Conley will review the plan Bi-Annually.

## 9.2 Action Plan

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This Airport Sustainability Plan prescribes a clear and simple implementation strategy that consolidates the planning information in the previous sections into an Action Plan (see **Table 9.1**) that will be used to track progress and inform decision-making at the airport. Through this plan, airport staff are committed to implementing the identified Sustainability Initiatives, taking a complete and sustainable approach to airport planning, operations, and development.

Public participation and community outreach is an integral part of implementing an Airport Sustainability Plan. It is important to inform local city governments, county commission boards, neighbors, airport users, and employees of the commitments and sustainability progress at the airport. Involving these stakeholders in the implementation process could help to gain support for the airport and its long-term plans. Centennial Airport will use the following methods to conduct outreach about the sustainability plan:

- Social media posts
- Newsletter
- Regularly scheduled meetings with tenants and/or public
- Presentations (at local meetings or conferences)
- Email news blasts
- Airport events
- Flyers

Centennial Airport Sustainability Plan

Table 9.1 Action Plan

Initiative	Focus Category	Associated Goals	Responsible Party	Level of Effort	Estimated Cost	Target Date	Funding Resource	Status
1. Relocate storm water sampling locations to better represent storm water from airport industrial areas.	Operational Efficiency - Ops Maintenance Natural Resources - Water	Improve on-site stormwater management practices to improve stormwater runoff quality.	Cameron Hallock	Medium		06/05/2017	Airport Funding	Complete
2. Explore the possibility of mineral extraction/ solar farms/ other projects on residual lands that generate revenue.	Operational Efficiency - Business Ops Economic Vitality - Revenue Generation Economic Vitality - Economic Development	Increase aeronautical and non-aeronautical revenue.	Cameron Hallock	Medium		08/16/2017	Airport Funding	Complete
3. Explore LEED construction designs for the new Administration building.	Economic Vitality - Expense Reduction Natural Resources - Energy	Reduce consumption of electricity generated by non-renewable sources.	Cameron Hallock	Medium		05/01/2018	Airport Funding	Complete
4. Develop and implement new marketing strategies to increase percentage of rented land/ improvements/ facilities square footage/ non-aeronautical uses.	Operational Efficiency - Business Ops Economic Vitality - Revenue Generation Economic Vitality - Economic Development	Increase aeronautical and non-aeronautical revenue.	Mike Fronapfel	Medium		08/17/2018	Airport Funding	Complete
5. Achieve bronze status in the Colorado Department of Health and Environment Environmental Leadership Program.	Social - Airport User Social - Community	Establish the airport as a local, statewide, and/or national leader of sustainability practices.	Dylan Heberlein	Medium		10/09/2018		Complete
6. Achieve silver status in the Colorado Department of Health and Environment Environmental Leadership Program.	Social - Airport User Social - Community	Establish the airport as a local, statewide, and/or national leader of sustainability practices.	Dylan Heberlein	Medium		12/31/2019		Complete

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7.	Explore design features in new administration building to promote employee wellness such as lighting, stand up desks, exercise room, sleeping quarters for snow crews.	Social - Employees	Promote employee wellbeing to improve productivity and efficiency.	Gina Conley	Medium		12/31/2019	Loan	Complete
8.	Consider using non-potable, raw water for outdoor irrigation where it is available.	Economic Vitality - Expense Reduction Natural Resources - Water	Reduce outdoor water consumption (i.e., irrigation, plane/vehicle washing, landscaping, other maintenance).	Mike Fronapfel	Medium		12/31/2020		Complete
9.	Explore opportunities to lease land and facilities for temporary use (i.e., conference room/business center in the new Administration building)/ special events.	Operational Efficiency - Business Ops Economic Vitality - Revenue Generation Economic Vitality - Economic Development	Increase aeronautical and non-aeronautical revenue.	Gina Conley	Medium		12/31/2020	Airport Funding	Complete
10.	Include a wellness center within the new Aviation Community and Administration Facility	Social - Employees	Promote employee wellbeing to improve productivity and efficiency.	Gina Conley	Medium		12/31/2020		Complete
11.	Upgrade 100% of airfield lighting to LED	Economic Vitality - Expense Reduction Natural Resources - Energy	Reduce consumption of electricity generated by non-renewable sources.	Lorie Hinton	Medium		12/31/2020	Airport Funding	Complete
12.	Use drones to conduct pond inspections to more efficiently inspect for discrepancies and improve storm water quality.	Operational Efficiency - Ops Maintenance Natural Resources - Water	Improve on-site stormwater management practices to improve stormwater runoff quality.	Mike Fronapfel	Medium		12/31/2020		Complete
13.	Create an Environmental Management System (EMS) to reduce the airport's environmental impact and increase operating efficiency.	Operational Efficiency - Asset Mgmt Operational Efficiency - Business Ops Operational Efficiency - Ops Maintenance	Enhance sustainability practices for all airport operations and maintenance, administration, procurement, design/construction/post-construction.	Gina Conley	Medium		12/31/2021		In Progress

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14.	Investigate increasing the number of recycling bins in strategic locations and improve signage directly adjacent that clearly identifies what can and cannot be recycled.	Economic Vitality - Expense Reduction Natural Resources - Waste	Increase the amount of waste material diverted to recycling.	Gina Conley	Low		12/31/2021	Airport Funding	In Progress
15.	Replace nozzles on ARFF equipment that allows equipment to be tested without releasing foam	Natural Resources - Waste	Reduce the use of hazardous materials and the generation of hazardous wastes.	Lorie Hinton	High		12/31/2021	State Grants	In Progress
16.	Achieve gold status in the Colorado Department of Health and Environment Environmental Leadership Program.	Social - Airport User Social - Community	Establish the airport as a local, statewide, and/or national leader of sustainability practices.	Gina Conley	Medium		12/31/2022		In Progress
17.	Continue tenant education and awareness efforts regarding stormwater BMPs (i.e., annual training and quarterly inspections).	Operational Efficiency - Ops Maintenance Natural Resources - Water	Improve on-site stormwater management practices to improve stormwater runoff quality.	Gina Conley	Medium		12/31/2022	Airport Funding	In Progress
18.	Continue working relationships with the local community leadership to reduce potential for development of non-compatible land uses by meeting with each municipality to review the airport land use guidelines.	Social - Community Social - Noise	Increase land use compatibility in the vicinity of the airport.	Rachel Keller	Medium		12/31/2022	Airport Funding	In Progress
19.	Continue working with community members, elected officials, the FAA, and the CACNR on noise mitigation.	Social - Community Social - Noise	Increase land use compatibility in the vicinity of the airport.	Rachel Keller	High		12/31/2022	Airport Funding	In Progress
20.	Investigate usage of a deice fee to be earmarked for stormwater management improvements.	Operational Efficiency - Ops Maintenance Natural Resources - Water	Improve on-site stormwater management practices to improve stormwater runoff quality.	Lorie Hinton	Medium		12/31/2022	Airport Funding	In Progress
21.	Investigate viability of acquiring land and restrictive covenants to ensure land use compatibility.	Social - Community Social - Noise	Increase land use compatibility in the vicinity of the airport.	Mike Fronapfel	Medium		12/31/2022	Airport Funding	In Progress

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22.	Investigate viability of renewable energy incentives for new Airport development.	Economic Vitality - Expense Reduction Natural Resources - Energy	Reduce consumption of electricity generated by non-renewable sources.	Mike Fronapfel	Medium		12/31/2022	Airport Funding	In Progress
23.	Issue website updates to local residents, businesses, libraries, and the city hall that discuss construction progress, airport updates, events, facts, and/or other information.	Social - Airport User Social - Community	Increase land use compatibility in the vicinity of the airport.  Establish the airport as a local, statewide, and/or national leader of sustainability practices.	Deborah Smith	Medium		12/31/2022		In Progress
24.	Partner with energy firms to consider renewable energy projects on residual lands that offset airport costs or generate revenue.	Operational Efficiency - Business Ops Economic Vitality - Revenue Generation Economic Vitality - Economic Development	Increase aeronautical and non-aeronautical revenue.	Mike Fronapfel	Medium		12/31/2022		In Progress
25.	Replace ramp lights with LED	Economic Vitality - Expense Reduction Natural Resources - Energy	Reduce consumption of electricity generated by non-renewable sources.	Lorie Hinton	Medium		12/31/2022		Planned
26.	Replace turf areas with conservation landscaping using native plants to reduce water, fertilizer, and mowing	Economic Vitality - Expense Reduction Natural Resources - Water	Reduce outdoor water consumption (i.e., irrigation, plane/vehicle washing, landscaping, other maintenance).	Gina Conley	Medium		12/31/2022	Airport Funding	Planned
27.	Investigate and implement opportunities to mitigate deice runoff issues	Operational Efficiency - Ops Maintenance Natural Resources - Water	Improve on-site stormwater management practices to improve stormwater runoff quality.	Gina Conley	High		12/31/2023	Airport Funding	In Progress
28.	Implement an apiary to promote sustainability by increasing the	Natural Resources - Natural Environment	Improve the natural environment on and around the airport.	Gina Conley	Medium	\$500	04/30/2019	Airport Funding	Complete



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	pollinator species that are imperative to our community and environment.								
29.	Test proprietary carbon media for effectiveness in treating glycol runoff in storm water in order to reduce impact on environment.	Operational Efficiency - Ops Maintenance Natural Resources - Water	Improve on-site stormwater management practices to improve stormwater runoff quality.	Lorie Hinton	Medium	\$60,000	05/31/2018	Airport Funding Private	Complete
30.	Upgrade 60% of airfield lighting to LED.	Economic Vitality - Expense Reduction Natural Resources - Energy	Reduce consumption of electricity generated by non-renewable sources.	Lorie Hinton	Medium	\$125,000	10/01/2016	Airport Funding	Complete
31.	Improve signage at the airport for easier user navigation to improve wayfinding and decreased traffic issues.	Social - Airport User Social - Community	Enhance the user experience.	Gina Conley	Medium	\$250,000	12/31/2022	Airport Funding	Planned
32.	Update Noise Exposure Maps.	Social - Community Social - Noise	Increase land use compatibility in the vicinity of the airport.	Aaron Repp	Medium	\$515,000	10/15/2016	Airport Funding Federal Grants	Complete
33.	Recycle/Reuse 100% of millings produced during the Runway 17R/35L rehab and midfield runup project in the summer of 2022.	Economic Vitality - Expense Reduction Natural Resources - Waste	Increase the amount of waste material diverted to recycling.	Lorie Hinton	High	\$12,000,000	12/31/2022	Federal Grants	Planned

## 10 Baseline Inventory

The Baseline Inventory provided in this section offers a snapshot of the existing conditions at Centennial Airport upon which the Goals and Initiatives were selected and will be the starting place from which the airport will track progress toward meeting its Goals.

### 10.1 Summary Airport Characteristics

Table 10.1 provides an overview of Centennial Airport’s core characteristics.

Table 10.1 Summary of Core Airport Characteristics

Focus Category	Airport Characteristics	Value
General/Operational	Associated City	DENVER
General/Operational	Identifier	APA
General/Operational	Full-time Airport Employees	26
General/Operational	Aircraft Operations (2020)	334,965
Economic/Financial	Airport Economic Impact (2013) (\$)	\$2,100,000,000
Economic/Financial	Total Land (acres)	1,315
Economic/Financial	Number of FBOs	5
Natural Resources - Energy	Annual Electricity Consumption (kWh)	747,477
Natural Resources - Water	Annual Potable Water Consumption (kGal)	1,563
Natural Resources - Waste	Solid Waste Generation (cubic yards)	672
Natural Resources - Climate/Air Quality	GHG Emissions (Scope 1 and 2) (MTCO <sub>2</sub> e)	N/A
Natural Resources - Natural Environment	Wildlife Strikes	23
Social	Noise Complaints	10,401

Source: Centennial Airport

### 10.2 Detailed Airport Characteristics

This section presents an inventory of existing economic, operational, environmental, and social conditions. This information helped Centennial Airport identify areas for improvement and provides a baseline level from which to track improvement over time.

#### 10.2.1 Economic

Centennial Airport is responsible for generating approximately \$2,100,000,000 for the local and regional economy according to the CDOT 2013 Economic Impact Study. These economic contributions stem from on- and off-airport employment that supports the administration, operation, and maintenance of the airport; activities associated with tenants or businesses at each airport; on-airport investment in improvements; and off-airport spending by visitors who arrive at the airport by air. The

economic contributions of these activities were measured through jobs, associated payroll, and economic output.

Centennial Airport staff plan to actively manage the financial affairs of the airport and strive to achieve or enhance financial self-sufficiency. Movement toward (or stability of) financial self-sufficiency is crucial to the airport’s long-term viability. To accomplish this, airport staff can measure and track the financial performance of the airport by understanding and analyzing the airport’s financial statements (e.g., Statement of Net Assets, Statement of Financial Activities, and Statement of Cash Flows). Associated metrics that indicate the financial performance of the airport include based aircraft, fuel volumes, aircraft operations, etc.

Some of the primary financial data points that are measured and tracked in this Airport Sustainability Plan include aeronautical and non-aeronautical operating revenues and costs of goods sold, operating expenses, operating income, non-operating sources of funds, non-operating uses of funds, change in net assets, total assets, total cash reserves, and total liabilities. **Table 10.2** provides an overview of the Centennial Airport’s financial performance in 2020.

**Table 10.2** Financial Data for Centennial Airport, 2020

Airport Characteristics	Value
Total Operating Revenues (Aeronautical) (\$)	\$5,501,390
Total Operating Revenues (Non-Aeronautical) (\$)	\$1,556,464
Total Operating Revenues (\$)	\$7,057,854
Total Cash Reserves (\$)	\$9,218,121
Total Operating Expenses (\$)	\$9,252,913
Total Assets (\$)	\$76,491,395
Total Liabilities (\$)	\$6,525,267

Source: Centennial Airport Audited Financials

Airports can produce revenue in various ways. Some engage in the sale and delivery of aviation products and services while other airports use a private, third-party company (for example, an FBO) to provide aeronautical products, services, and facilities. In addition many airports derive revenue from the leasing of land and/or facilities including non-aeronautical uses. **Table 10.3** provides an overview of the airport’s revenue sources.

**Table 10.3** Indicators that Can Influence Financial Performance, 2020

Airport Characteristics	Value
Rentable Land (acres)	695
Rented Land (acres)	573
Total Facilities (square feet)	4,350
Rented Facilities (square feet)	4,350
Jet Fuel Sold (\$)	\$0
AvGas Sold (\$)	\$0
Total Aviation Fuel Sold (\$)	\$0
Jet Fuel Sold (Gallons)	11,639,803
AvGas Sold (Gallon)	636,132
Total Aviation Fuel Sold (Gallons)	12,275,935
Types of Aviation Fuel Sold	100LL A
Local Subsidies (\$)	\$0
State Fuel Tax Revenue (\$)	\$967,341
Federal Grants (\$)	\$5,177,645
State Grants (\$)	\$6,906

Source: Centennial Airport

### 10.2.2 Operational

An aircraft operation is defined as either a landing or a takeoff. As such, total operations represents the sum of all landings and takeoffs at an airport. In 2020, there were approximately 334,965 operations at Centennial Airport. Historical and forecasted operations for the airport are included in **Table 10.4**.

Table 10.4 Operational Data at Centennial Airport, 2020

Airport Characteristics	Value
Service Level	Reliever
Category	National
Tower	Yes
Based Aircraft (2020)	880
Based Aircraft (2040)	900
Airport Full-time Employees (#)	26
Average Employee Tenure (years)	11
Number of Runways (#)	3
Length of Main Runway (feet)	10,001
Width of Main Runway (feet)	100
Enplanements (2014)	250
Enplanements (2040)	250
Aircraft Operations (2020)	334,965
Aircraft Operations (2040)	383,000
Runway Closure Time (hours)	N/A
Sustainable Criteria in Purchasing Policies, Leases, or Contracts	Yes
Aircraft Incidents (#)	40
Aircraft Accidents (#)	4

Source: Centennial Airport

Aircraft Incidents include those in NTSB definition as well as minor incidents like blown tires, minor damage.

### 10.2.3 Natural Resources

#### 10.2.3.1 Energy

Energy consumption can be a very large expenditure at an airport. Energy conservation initiatives can therefore have a considerable and positive impact on both an airport’s financial health and environmental footprint. Table 10.5 shows energy consumption data for Centennial Airport.

Table 10.5 Annual Energy Data, 2020

Airport Characteristics	Value
Total Utility (elec, nat gas, fleet fuel) Cost (\$)	\$114,064
Electricity Consumption (kWh)	747,477
Electricity Cost (\$)	\$76,449
Renewable Electricity (kWh)	0
Natural Gas Consumption (therms)	36,923
Natural Gas Cost (\$)	\$17,443
Fleet Fuel Consumption (gallons)	N/A
Fleet Fuel Cost (\$)	\$20,173
Airport Vehicles/Equipment (#)	39

Source: Centennial Airport

For the past 7 years Centennial Airport has been updating airfield lighting to LED. With our latest airfield project completed in the summer of 2020, we are now 100% LED with the exception of ramp lights.

Fleet fuel cost in 2020 dropped from 2019 due to the pandemic. More people working from home and not driving fleet vehicles.

### 10.2.3.2 Water

Conservation of water can reduce costs at the airport, thereby improving financial viability. Further, because drought is a normal, recurrent feature of Colorado’s climate, water conservation can benefit the environment both locally and regionally. Table 10.6 presents water use and costs for Centennial Airport.

Table 10.6 Annual Water Data, 2020

Airport Characteristics	Value
Sewer Cost (\$)	\$4,889
Potable Water Cost (\$)	\$22,649
Potable Water Consumption (kGal)	1,563
Non-potable Water Cost (\$)	\$0
Non-potable Water Consumption (kGal)	0
Water Quality Violations (#)	N/A

Source: Centennial Airport

### 10.2.3.3 Waste

Airports regularly produce both solid and hazardous waste. Proper disposal of those wastes help to minimize the impacts to surrounding natural environment. In 2020, the airport generated approximately 672 cubic yards of waste. Waste disposal costs for 2020 were \$4,939 for the airport. Table 10.7 shows waste data for the airport.

Table 10.7 Annual Waste Data, 2020

Airport Characteristics	Value
Solid Waste Generation (cubic yards)	672
Waste Disposal Costs (\$)	\$4,939
Recycling Program	Yes
Recycled Waste (cubic yards)	363
Recycling Disposal Costs (\$)	\$2,449
Hazardous Waste Generated Annually (Tons)	N/A
Hazardous Materials Used Annually (\$)	N/A

Source: Centennial Airport

Note that waste/recycling pick up is by frequency (meaning, bin may not be at capacity each time). Iron Mountain paper recycling included in recycled waste.

#### 10.2.3.4 Climate and Air Quality

Sources of pollutants and greenhouse gas emissions at an airport include aircraft, ground support equipment, and airport-based vehicles, such as trucks and rescue vehicles. In addition, airport facilities and infrastructure, such as airport boilers and fuel tanks, contribute to air quality at the airport. Approximate Scope 1 and 2 (airport-controlled) greenhouse gas emissions were calculated from energy inputs in the baseline inventory (see Table 10.8).

Table 10.8 Climate and Air Quality Data, 2020

Airport Characteristics	Value
Greenhouse Gas Emissions (Scopes 1 and 2) (MTCO <sub>2e</sub> )	N/A
Indoor Air Quality Improvement Measures Implemented (Y/N)	N/A
Alternative Transportation Options (#)	N/A

#### 10.2.3.5 Natural Environment

Airports must consider the impact of their operations on the surrounding natural environment and reduce those impacts whenever possible. Table 10.9 documents the number of wildlife strikes that occurred at the Centennial Airport in 2020.

Table 10.9 Natural Resources Data, 2020

Airport Characteristics	Value
Wildlife Strikes	23

Source: Centennial Airport

### 10.2.4 Social Responsibility

An airport is an important, visible member of the local community. While most individuals do not have direct contact with the airport, the aircraft using the facility are often noticed. Because the community is both directly and indirectly affected by the airport, it is important to consider social factors in the baseline. **Table 10.10** includes information about interactions, both positive and negative, with the surrounding community.

**Table 10.10 Annual Social Data, 2020**

Airport Characteristics	Value
Security Incidents (#)	N/A
Noise Complaints (#)	10,401
Community Collaborations/Events (#)	8
User Complaints (#)	N/A
Media Updates (Y/N)	Yes
Recognition for Sustainability Practices (Y/N)	Yes
Internships (Y/N)	Yes

Source: Centennial Airport

We typically have community events that include large events on airport property (i.e., Challenge Air, Morgan Adams event,... etc.). Also, some events such as Young Eagles and Public Airport Tours occur multiple times per year, weather permitting. Unfortunately, due to the pandemic in 2020, the majority of our community events did not happen.

In 2020, 2,156 noise complaints were attributed to 1 household. Due to encroachment and increase in noise concerns, the Centennial Airport Community Noise Roundtable (CACNR) was established in 2009, and is made up of members of the surrounding jurisdictions. They meet monthly to help communicate with the public on noise concerns and work with the airport to find ways to reduce and mitigate the impact of aircraft noise.

Social Media accounts on Twitter, Facebook, and Instagram are routinely updated especially for airport related events. Centennial Airport has been a part of the Colorado State Environmental Leadership Program since 2018 and currently holds silver status.

## 11 Conclusion

This Airport Sustainability Plan outlines a roadmap for the integration of sustainability throughout the operations and management of Centennial Airport. In developing this plan, Centennial Airport staff are taking advantage of a great opportunity to improve services and incorporate sustainability into planning decisions to aid the airport in achieving its specific goals and initiatives.

Centennial Airport staff will continue to use the CDOT Sustainability Program in order to update and review this plan each year into the future. This plan is meant to be a living document, meaning that airport staff will continue to revise the plan based on changing conditions at the airport or changes in focus areas or goals. In this way, the plan will provide for even better ways to address sustainability moving forward.