



DRAFT Sustainable Initiatives Index

ACI Sustainability Working Group

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QUESTIONS OR COMMENTS? PLEASE CONTACT:



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Sustainable Initiatives Index – Working DRAFT

ACI Sustainability Working Group

The ACI Sustainability Working Group was tasked with developing a comprehensive listing of implemented and applicable best practices, standards, and procedures. The Sustainable Initiatives Index is a list of sustainable initiatives applicable to airports compiled from various sources. The major topical headings are based on guidance provided in the U.S. Green Building Council's *Leadership in Energy & Environmental Design (LEED) Reference Guide, Version 2.1*. The U.S. Green Building Council (<http://www.usgbc.org>) works to promote buildings that are environmentally responsible, profitable, and healthy places to live and work and has established a system to rate and recognize buildings that have demonstrated a commitment to sustainability. The individual sustainability initiatives contained in this Index have been compiled from several sources based on those initiatives relevant to airports:

- *LEED Reference Guide, Version 2.1 (updated Version 2.2 and related materials)*
- The City of Chicago O'Hare Modernization Program, *Sustainable Design Manual*, December 2003
- Other on-going airport sustainable programs and industry resources (*refer to the accompanying Sustainability Initiatives Index Web Links guidance*)
- ACI Sustainability Working Group – input from project experience and examples

This initial compilation of sustainable initiatives could be used in several ways: (1) to document and serve as guidance to sustainable operations for airport operators, (2) to evaluate and rate airports' sustainability, or (3) for use as a planning tool for airport operators in developing specific sustainability plans.

It is intended that this Index be circulated among the members of the ACI Sustainability Working Group for review and comment. We hope that reviews will provide suggestions for additional sustainability initiatives to be added to this Index.

The following topics are covered in the working draft of the Sustainable Initiatives Index:

1. Administrative	6. Energy and Atmosphere
2. Stormwater Management	7. Indoor Environmental Quality
3. Water Efficiency	8. Facility Operations
4. Ground Transportation Resources	9. Materials and Resources
5. Landscape and Exterior Design	10. Construction Practices

I. Administrative

Administratively, airports today implement sustainable initiatives through the adoption of numerous policies/goals and administrative processes. Sustainability goals can be further enhanced and maximized using administrative tools.

Ref. No.	Sustainable Initiative	Goal	In Place
1.01	Policy, Requirements and Prerequisites		
1.01.01	Environmental Management System (EMS)		
1.01.02	Stormwater Pollution Prevention Plan (SWPP)		
1.01.03	Soil Erosion and Sedimentation Control Plan (SESC)		
1.01.04	Spill Prevention Countermeasure and Control Plan (SPCC)		
1.01.05	Best Management Policy Procedures		
	<ul style="list-style-type: none"> Underground Storage Tank Management Plan Above Ground Storage Tank Management Plan 		
1.01.06	Sustainable Vision/Mission Statement		
1.01.07	Sustainable Design Guidelines		
1.01.08	Sustainable Landscape Guidelines		
	<ul style="list-style-type: none"> Airside Landscape Guidelines Landside Landscape Guidelines 		
1.01.09	Air Quality Improvement Program		
1.01.10	Energy Conservation/Efficiency Plan		
1.01.11	Recyclables Material Plan		
1.01.12	Environmental Tobacco Smoke Control Plan		
1.01.13	Construction Waste Management Plan		
1.01.14	Construction Dust Control Plans		
1.01.15	Equipment Vehicle Maintenance Requirements		
1.02	Administrative/Implementation		
1.02.01	Contracts Administration – Integration of various departments to promote sustainability goals		
	<ul style="list-style-type: none"> Procurement Operations Ground Transportation Real Estate Legal 		
1.02.02	Encourage use of local vendors/suppliers		
1.02.03	Integration of IT systems to maximize teamwork, transparency and information sharing		
	<ul style="list-style-type: none"> Web directories and links Web based document sharing Web based Procurement Process – RFQ/RFP, notices/advertisements Electronic/digital document process – reducing paper needs/number of copies produced 		
1.02.04	Administrative – Employee work force retention		
	<ul style="list-style-type: none"> Employee training programs Require training/recruiting of local minority workforce Establish traditional M/WBE programs, certification and goals 		
1.02.05	Sustainability focused Strategic Planning Process		
1.02.06	Environmental monitoring and reporting		
1.02.07	Community partnering programs		
1.02.08	Statewide purchasing alliances		
1.02.09	Community Outreach Programs		
1.02.10	System Commissioning and Verification Process		

2. Stormwater Management

Sustainable measures for stormwater management include initiatives to reduce and control erosion and sedimentation, limit disruption and pollution of natural water flows by controlling runoff rates and quantities from the entire site, and to remove solids and contaminants from all stormwater runoff.

Ref. No.	Sustainable Initiative	Goal	In Place
2.01	Erosion & Sedimentation Control		
2.01.01	Develop and maintain an erosion and sediment control plan consistent with EPA Document No. EPA 832/R-92-005 or local Erosion and Sediment Control standards and controls, if applicable.		
2.01.02	Incorporate temporary sedimentation basins, temporary ditch checks, diversion dikes, temporary ditches, and/or pipe slope drains into construction plans.		
2.01.03	Establish temporary and permanent mulching and seeding plans to provide soil stabilization for all disturbed areas.		
2.01.04	Install earth dikes, silt fences, sediment traps, and/or sediment basins to control erosion and sedimentation.		
2.01.05	Monitor water quality impacts before and during construction, especially after significant storm events.		
2.01.06	During site disturbance activities, stockpile and protect topsoil for potential re-use.		
2.01.07	Develop a policy to chip or compost all vegetation for re-use on site and replant disturbed vegetation ASAP.		
2.02	Stormwater Management, Rate & Quantity		
2.02.01	Design projects to ensure no net increase in rate and quantity of stormwater runoff.		
2.02.02	Install pervious pavements for roadways, shoulders, non-traffic pavements, maintenance roads, utility yards, airside and landside parking facilities, where possible.		
2.02.03	Remove existing pavement not required or needed for future use.		
2.02.04	Install landscaping and plant materials that will reduce runoff rates, where possible.		
2.02.05	Install curb breaks and drainage ditches, and/or bioswales, where possible.		
2.02.06	Install green roof systems.		
2.02.07	Install rainwater cisterns for use in landside irrigation, where feasible.		
2.03	Stormwater Management, Treatment		
2.03.01	Implement Best Management Practices outlined in Chapter 4, Part 2 (Urban Runoff), of the United States Environmental Protection Agency's Guidance <i>Specifying Management for Sources of Nonpoint Pollution in Coastal Waters</i> , January 1993 (document No. EPA-840-B-92-002).		
2.03.02	Install first flush systems including slotted edge drains connected to underground holding tanks.		
2.03.03	Install detention basins, detention ditches, ditch checks and/or other BMP's for effective first flush treatment, if possible.		
2.03.04	Install bioswales along roadways and parking areas to encourage groundwater infiltration of stormwater runoff. On airside projects, these strategies must be designed so that they do not provide wildlife habitat.		
2.03.05	Minimize current treatment of all stormwater by reducing runoff.		
2.03.06	Provide central deicing facilities and collect excess glycol in separate collection systems.		

3. Water Efficiency

The sustainable initiatives discussed in this section identify ways to reduce water usage and the generation of wastewater.

Ref. No.	Sustainable Initiative	Goal	In Place
3.01	Innovative Wastewater Technologies		
3.01.01	Install high-efficiency plumbing fixtures and valves.		
3.01.02	Utilize plumbing fixtures such as dual flush toilets and waterless urinals.		
3.01.03	Collect and reuse stormwater for non-potable uses (e.g., landscape irrigation under Section 1.6).		
3.01.04	Capture graywater for sewage conveyance or on-site wastewater treatment systems.		
3.01.05	Construct on-site wastewater treatment facilities.		
3.02	Water Use Reduction		
3.02.01	Install water-conserving plumbing fixtures and valves such as automatic sensors, aerators on lavatories, pressure-assisted toilets, and dual-flush toilets.		
3.02.02	Use reclaimed water for cooling tower makeup.		
3.02.03	Use pulsed-power electromagnetic water treatment, ultraviolet treatment, or ozone treatment for cooling tower water.		
3.02.04	Use a non-potable water supply system for vehicle washing and maintenance.		
3.02.05	Use tank-less hot water heaters.		

4. Ground Transportation Resources

Sustainable initiatives for ground transportation resources consider means to reduce the impacts of automobile use at airports by encouraging alternative transportation such as public transportation, bicycles, and alternative fuel vehicles as well as minimizing general site impacts of automobile parking areas.

Ref. No.	Sustainable Initiative	Goal	In Place
4.01	Alternative Transportation - Public Transportation Access		
4.01.01	Provide public rail within 0.5 miles.		
4.01.02	Provide public bus lines within 0.25 miles.		
4.01.03	Provide incentives to employees to use public transit.		
4.01.04	Consolidate rental car facilities and shuttle transportation to minimize congestion on terminal roadways.		
4.01.05	Provide satellite check-in facilities (such as at a central downtown location) to minimize congestion on terminal and access roadways and encourage the use of public transportation.		
4.02	Alternative Transportation - Bicycle Access		
4.02.01	Provide safe bicycle lanes and paths.		
4.02.02	Provide centralized facilities for secure bicycle storage.		
4.02.03	Provide convenient changing/shower areas.		
4.02.04	Provide incentives for employees to bike to work.		
4.03	Alternative Transportation - Alternative Fuel Vehicles		
4.03.01	Develop new programs for alternative fuel vehicles within the airport operations.		
4.03.02	Enhance existing programs for alternative fuel vehicles within the airport operations.		
4.03.03	Provide incentives to staff and public for alternative fuel vehicle usage: <ul style="list-style-type: none"> • Establish lower fees for alternative fuel vehicles. • Provide preferred parking incentives. • Grant concessions to firms with lowest fleet emissions. • Provide incentives for hybrid/electric vehicle purchases/conversions. 		
4.03.04	Provide alternative fuel refueling stations for public use at airport.		
4.04	General Site Impacts		
4.04.01	Provide incentives such as preferred parking for vanpools and carpools for staff.		
4.04.02	Encourage telecommuting and off-site work, and restructure organization to minimize travel requirements.		

5. Landscape and Exterior Design

Sustainable initiatives for landscaping and exterior design aim to reduce the heat island effect between development and undeveloped areas, reduce light pollution, and reduce impacts on potable water supplies.

Ref. No.	Sustainable Initiative	Goal	In Place
5.01	Landscape & Exterior Design to Reduce Heat Islands, Non-Roof		
5.01.01	Maximize light colored pavement for roadways, parking lots, and sidewalks areas.		
5.01.02	For landside projects, plant trees to shade dark colored impervious surfaces.		
5.01.03	Provide structured parking.		
5.01.04	Use open grid pavement.		
5.02	Landscape & Exterior Design to Reduce Heat Islands, Roof		
5.02.01	Use an ENERGY STAR compliant roofing system.		
5.02.02	Use a "green" vegetated roof.		
5.03	Light Pollution Reduction		
5.03.01	Implement lighting design to minimize off-site impacts.		
5.03.02	Minimize site lighting where possible, use for safety, access, and building identification only.		
5.03.03	Monitor interior lighting system regularly to maintain proper illumination and minimize off-site impacts.		
5.03.04	Monitor exterior lighting system regularly to maintain proper illumination and minimize off-site impacts.		
5.04	Water Efficient Landscaping		
5.04.01	Do not install an irrigation system supplied by potable water.		
5.04.02	Plant native vegetation for site landscaping.		
5.04.03	Capture stormwater and/or graywater for use in irrigation.		

6. Energy and Atmosphere

Energy and atmosphere sustainable initiatives reduce energy consumption, improve energy performance, and consider alternative energy sources in order to minimize natural resource extraction impacts and reduce atmospheric, ground, and water pollution.

Ref. No.	Sustainable Initiative	Goal	In Place
6.01	Systems Commissioning		
6.01.01	Establish systems commissioning requirements consistent with sustainable design to ensure optimal performance of systems. Consider the following systems:		
	<ul style="list-style-type: none"> • Central Building Automation System • All HVAC system equipment • Lighting controls and sensors • Site Lighting • Refrigeration systems • Vertical Transport • Building Envelope • Emergency Power Generators and Automatic Transfer Switching • Uninterruptible Power Supply systems • Life Safety systems; Fire protection Fire alarm, Egress pressurization • Lighting Protection • Domestic and Process water pumping and mixing systems • Equipment sound control systems • Data and Communication systems • Paging systems • Security systems • Irrigation systems • Plumbing 		
6.02	Minimum Energy Performance		
6.02.01	Meet local Energy Conservation Code.		
6.02.02	Design buildings to comply with ASHRAE/IESNA Standard 90.1-1999.		
6.02.03	For runways, civil/stormwater and roadways/rail, design site systems to comply with the intents of ASHRAE/IESNA Standard 90.1-1999 related to energy savings goals		
6.03	Optimize Energy Performance		
6.03.01	Use a computer simulation model to assess energy performance and identify the most cost effective energy measures.		
6.03.02	Provide high-efficiency motors and systems.		
6.03.03	Provide energy efficient lighting systems.		
6.03.04	Organize lighting circuitry and building systems so that individual areas are separately controlled.		
6.03.05	Orient building for passive solar/daylight penetration.		
6.03.06	Enhance architectural features to maximize daylighting and avoid glare problems.		
6.03.07	Use motion sensors to turn off equipment when occupants are not present.		
6.03.08	Provide appropriate training for the operations and maintenance of all systems.		
6.03.09	Minimize air infiltration through all exterior openings.		
6.03.10	Quantify energy performance compared to the baseline building and provide a summary report.		
6.03.11	Implement the following technologies and strategies for buildings and structures:		
	<ul style="list-style-type: none"> • Cogeneration for terminals and concourses. • Energy efficiency upgrades to relocated facilities. 		

Ref. No.	Sustainable Initiative	Goal	In Place
	<ul style="list-style-type: none"> Use LED "exit" signs in buildings. 		
	<ul style="list-style-type: none"> Provide daylight harvesting control systems. 		
	<ul style="list-style-type: none"> Optimize lighting controls. 		
	<ul style="list-style-type: none"> Integrate lighting systems with building automation systems. 		
	<ul style="list-style-type: none"> Use high performance glazing and window systems. 		
	<ul style="list-style-type: none"> Use underfloor air distribution systems. 		
	<ul style="list-style-type: none"> Maximize levels of insulation and thermal mass. 		
	<ul style="list-style-type: none"> Use premium efficiency motors. 		
	<ul style="list-style-type: none"> Use ground-source heat pumps. 		
6.03.12	For runways, use LED lighting and signals.		
6.03.13	For civil/stormwater and roadways/rail projects, use LED lighting and signals.		
6.03.14	Implement non-electrified snowmelt procedures, including Hydronic runway pavement for snowmelt and Epoxy overcoat with glycol for controlling snow on runways.		
6.03.15	Use cogeneration for tasks/projects and for coordinated intra-task project power requirements.		
6.03.16	Reduce after-hour energy consumption.		
6.04	CFC Reduction		
6.04.01	Ensure new building HVAC equipment does not use CFC or HCFC refrigerants.		
6.04.02	For existing HVAC systems, inventory equipment that uses CFC and HCFC refrigerants and adopt a replacement schedule for these refrigerants.		
6.05	Renewable Energy		
6.05.01	Use discrete photovoltaic power source for outlying equipment, ancillary buildings, and parking and site lighting.		
6.05.02	Use solar hot water pre-heat.		
6.05.03	Use solar trombe-walls for passive solar heating.		
6.05.04	Use building-integrated photovoltaics.		
6.06	Measurement & Verification		
6.06.01	Use continuous metering equipment for the following:		
6.06.02	<ul style="list-style-type: none"> Lighting systems and controls 		
6.06.03	<ul style="list-style-type: none"> Constant and variable motor loads 		
6.06.04	<ul style="list-style-type: none"> Variable frequency drive (VFD) operation 		
6.06.05	<ul style="list-style-type: none"> Chiller efficiency at variable loads (kW/ton) 		
6.06.06	<ul style="list-style-type: none"> Cooling load 		
6.06.07	<ul style="list-style-type: none"> Air and water economizer and heat recovery cycles 		
6.06.08	<ul style="list-style-type: none"> Air distribution static pressures and ventilation air volumes 		
6.06.09	<ul style="list-style-type: none"> Boiler efficiencies 		
6.06.10	<ul style="list-style-type: none"> Building-related process energy systems and equipment 		
6.06.11	<ul style="list-style-type: none"> Indoor water risers and outdoor irrigation 		
6.06.12	Follow a Measurement and Verification plan that incorporates the monitoring information from the above and end-users and is consistent with Option B, C or D of the <i>2001 International Performance Measurement & Verification Protocol (IPMVP) Volume I: Concepts and Options for Determining Energy and Water Savings</i> .		
6.07	Green Power		
6.07.01	Purchase from a utility provided 'green power' electricity generated from wind energy systems or other renewable sources.		

7. Indoor Environmental Quality

Indoor environmental quality influences health, productivity, and quality of life. Indoor environmental quality sustainable initiatives include the provision of proper air quality, illumination, acoustics, and temperature.

Ref. No.	Sustainable Initiative	Goal	In Place
7.01	Minimum Indoor Air Quality Performance		
7.01.01	Identify potential indoor air quality problems on the site and locate air intakes away from contaminants, including loading areas, exhaust fans, and cooling towers.		
7.01.02	Locate air intakes for protection from potential attacks.		
7.01.03	Meet the ventilation requirements of the referenced standard.		
7.01.04	Use carbon or electrostatic filters.		
7.01.05	Provide security monitoring for outdoor air intakes for terminal buildings.		
7.02	Environmental Tobacco Smoke Control		
7.02.01	Prohibit smoking in the public areas of buildings and locate any exterior designated smoking areas away from entries and operable windows.		
7.02.02	Require all parts of the construction sites to be non-smoking.		
7.02.03	Work with unions in privately leased spaces (such as cargo) to designate these areas as non-smoking.		
7.02.04	If an interior smoking area is necessary, provide a designated smoking room designed to effectively contain, capture, and remove environmental tobacco smoke from the building using a separate ventilation system.		
7.03	Carbon Dioxide Monitoring		
7.03.01	Install permanent carbon dioxide monitoring systems and integrate these sensors with the building automation system.		
7.03.02	Provide for real-time control of terminal unit (VAX box) flowrates and total outdoor air flowrates based on carbon dioxide levels.		
7.04	Ventilation Effectiveness		
7.04.01	Install air diffusers for all mechanically ventilated spaces, particularly office and terminal spaces, following the recommended design approaches in the ASHRAE 2001 Fundamentals, Chapter 32, Space Air Diffusion.		
7.04.02	Increase air change effectiveness using: <ul style="list-style-type: none"> • Displacement ventilation in terminal areas. • Underfloor air distribution in office areas. • Operable windows and skylights in cargo buildings. • Increase air movement in cargo facilities with ceiling fans. 		
7.04.03	Install trickle ventilators in cargo facilities.		
7.04.04	Install relief vents or operable skylights in cargo facilities.		
7.05	Low Emitting Materials		
7.05.01	Use Low-VOC adhesives and sealants.		
7.05.02	Use Low-VOC field applied paints and coating.		
7.05.03	Use Low-VOC carpet systems.		
7.05.04	Used wood and agrifiber products with no added urea-formaldehyde resins.		
7.05.05	Ensure that all shop finished material meet the VOC emission requirements. Materials to consider are: <ul style="list-style-type: none"> • Primed steel • Finished metals including aluminum • Finished millwork • Finished steel and wood doors and windows 		
7.06	Indoor Chemical and Pollutant Source Control		
7.06.01	Plumb drains for appropriate disposal of liquid waste.		
7.06.01	Install finish materials and assemblies that resist mold growth.		
7.06.03	Designate central locations in terminal and office buildings for storage of		

Ref. No.	Sustainable Initiative	Goal	In Place
	concentrated cleaning chemicals and other pollutant sources.		
7.06.04	Install separate exhaust and plumbing systems for room/areas with contaminants.		
7.06.05	Use of electric vehicle in indoor facilities.		
7.06.06	Use of non-absorptive flooring and walls.		
7.06.07	Use of indoor toxic-absorptive vegetation.		
7.06.08	Use of non-toxic cleaning supplies.		
7.07	Controllability of Systems		
7.07.01	Correlate lighting in public areas of terminals to flight schedules.		
7.07.02	Design terminal areas with at variety of light and sound levels.		
7.07.03	Install operable windows in areas that are not noise-sensitive.		
7.07.04	Install task lighting or more light switching zones in offices areas.		
7.07.05	Install under floor air distribution systems with individual diffusers in office areas.		
7.07.06	Integrate all building electrical systems.		
7.08	Thermal Comfort		
7.08.01	Install ceiling fans or natural ventilation in cargo spaces.		
7.08.02	Use humidification in HVAC systems serving office and terminal areas.		
7.08.03	For spaces with humidification, install humidistats.		
7.08.04	Use thermal storage heating and cooling systems.		
7.08.05	Install thermally efficient glass.		
7.09	Daylight and Views		
7.09.01	Maximize interior daylight. Consider:		
	<ul style="list-style-type: none"> • Building orientation • Shallow floor plates • Increased building perimeter • Floor-to-ceiling heights • Ceiling configurations • Design the building to maximize view opportunities. 		
7.09.02	Provide sky or clerestory lighting as appropriate in cargo facilities		
7.09.03	Coordinate daylight strategy with building automation system and lighting control system.		
7.09.04	Provide exterior and interior permanent shading devices.		
7.09.05	Provide spectrally selective glazing to maximize daylight while minimizing heat gain.		
7.09.06	Install light-colored roofing material.		
7.09.07	Install photo-integrated light sensors to dim artificial lights.		
7.09.08	Predict daylighting via calculations or model daylighting strategies to assess footcandle levels and daylight factors achieved.		
7.10	Fuel Vapor Monitoring		
7.10.01	Use remote monitoring systems for detection of Jet A vapors.		
7.11	Noise Transmission		
7.11.01	Locate glazing and other noise transmission surfaces away from the most noise-sensitive spaces.		
7.11.02	Orient building such that glazed surfaces are not directed toward noise.		
7.11.03	Use laminated glazing to reduce noise transmission.		

8. Facility Operations

The sustainable initiatives described in this section are intended to minimize or eliminate environmental site pollution and contamination, as well as reduce energy usage attributable to facility operations.

Ref. No.	Sustainable Initiative	Goal	In Place
8.01	Maintenance Equipment		
8.01.01	Prior to installing or purchasing determine required maintenance procedures for materials and systems specifically with attention to disposal requirements and impacts to indoor environmental quality.		
8.01.02	Use environmentally friendly cleaning products and processes.		
8.01.03	Perform vehicle and equipment maintenance indoors, where possible.		
8.01.04	Design floor drains in indoor maintenance areas (including aircraft maintenance) to discharge to the sanitary sewer and not the stormwater system		
8.01.05	Perform outdoor maintenance in a designated area paved with impervious concrete. The maintenance area should be a minimum of 50 feet from any storm drain inlet.		
8.01.06	Maintain and locate Spill Control Kits in areas readily accessible to all maintenance areas.		
8.02	Furniture, Fixtures, and Equipment		
8.02.01	Purchase and install recycled furniture.		
8.02.02	Purchase and install furniture systems that are Greenguard certified.		
8.02.03	Purchase and install EnergyStar appliances and computers.		
8.03	Exterior Pest Management Program		
8.03.01	Establish a non-toxic pest control program.		
8.04	Brownfield Prevention Program		
8.02.01	Implement procedures and practices to prevent environmental contamination of properties.		
8.02.02	Develop a Brownfield Prevention Program for the airport to implement strategies that prevent pollution and minimize waste generation.		
8.02.03	Institute solid and fluid waste containment methods and disposal protocols to support minimal or no site contamination.		
8.05	Exterior Air Quality		
8.05.01	Institute procedures to protect exterior air quality during construction activities, including: <ul style="list-style-type: none"> • Cover loose materials and exposed earth • Water down loose materials and exposed earth • Prohibit use of chemical soil stabilizers • Spray down truck wheel wells and use rumble strips before existing site • Perform regular street sweeping • Install temporary fencing • Require dust palliatives or penetration asphalt on haul roads • Require hydroseed or fast-growing vegetation on disturbed areas 		
8.05.02	Utilize alternative fuel service vehicles		
8.05.03	Prepare VALE program application for Airport Emission Reduction Credits		
8.05.04	Provide facilities or area for public transportation connections to the airport.		
8.05.05	Install a people-mover system from remote parking lots, rental car facilities, employee parking, etc. to reduce traffic and vehicles on terminal roadways.		
8.05.06	Prohibit burning of landscape waste; mulch or chip all landscape waste.		
8.05.07	Install photovoltaic power sources.		
8.05.08	Utilize preconditioned air at gates.		
8.05.09	Utilize 400 Hz power at gates.		
8.05.10	Purchase and utilize low-emission fueled heating and cooling equipment.		

Ref. No.	Sustainable Initiative	Goal	In Place
8.05.11	Use ARFF training facility for firefighting training exercises.		
8.05.12	Use Fuel Vapor Recovery systems.		
8.05.13	Use Fuel Hydrant Systems at gates.		
8.05.14	Require Off-Peak Fueling.		
8.05.15	Provide access to bus and rail service.		
8.05.16	Use of a remote curb location outside of terminal core (such as Kiss-n-Fly)		
8.05.17	Provide Commercial Vehicle Holding Area.		
8.05.18	Provide Centralized Ground Transportation Center.		
8.05.19	Implement on-demand system to taxi management		
8.05.20	Provide incentives for shared rides in taxis		
8.05.21	Streamline taxis by requiring smaller headboards		
8.05.22	Develop Economical Parking Rate Structure for remote, long-term parking.		
	Develop Vehicle Inspection Program to ensure pollution control devices are in place.		
8.05.23	Install additional lanes/booths at parking structures		
8.05.24	Install Parking Pay-by-foot/Pay and Go machines.		
8.05.25	Install intelligent garage space availability system in parking garage(s)		
8.05.26	Utilize Automated Vehicle Identification (AVI) System to reduce congestion and trips.		
8.05.27	Utilize Traffic Flow Monitoring.		
8.05.28	Install Solar Energy Roadway Signs.		
8.05.29	Require diesel idling restrictions for delivery vehicles.		
8.05.30	Install Quick Charge Electric Charging Stations.		
8.05.31	Shut down Ground Service Equipment (GSE) when not in use		
8.05.32	Use Alternatively Fueled GSE and shuttle buses.		
8.05.33	Use GSE tugs for aircraft pushback from gates.		
8.05.34	Reduce aircraft engine use during delay through operating procedures.		
8.05.35	Require single engine aircraft taxi		
8.05.36	Design future airport layout to reduce aircraft delay		
8.06	Noise and Acoustical Quality		
8.06.01	Require use of Stage III or better aircraft.		
8.06.02	Develop and require use of RNAV procedures to reduce noise on surrounding land uses.		
8.06.03	Require use of single engine taxi procedures.		
8.06.04	Install ground run-up enclosure.		
8.06.05	Install Noise Monitoring System (NMS).		
8.06.06	Develop and implement residential sound insulation program, if any residential units are located within areas exposed to significant aircraft noise.		
8.06.07	Develop and implement school sound insulation program, if any schools are located within areas exposed to significant aircraft noise.		
8.06.08	Establish and maintain a community noise resource website to share information about airport operations and noise mitigation efforts, if applicable.		
8.07	Wildlife Management		
8.07.01	Use non-toxic wildlife control methods.		
8.07.02	Develop a wildlife hazard control plan that specifies and maintains all vegetated areas of the airport. These areas should be maintained so that they do not provide attractants to wildlife potentially hazardous to airport operations.		

9. Materials and Resources

The sustainable initiatives described in this section are intended to reduce use of, recycle, and reuse resources to minimize airports' impacts on materials and resources.

Ref. No.	Sustainable Initiative	Goal	In Place
9.01	Storage and Collection of Recyclables		
9.01.01	Incorporate collection rooms for recycling.		
9.01.02	Recycling of the following wastes:		
	• Aluminum		
	• Glass		
	• Paper, newspapers, magazines, phone books and cardboard		
	• Carpet		
	• Food waste		
	• Gas & oil filters		
	• Waste gasoline and motor oil		
	• Motor oil and Anti-freeze		
	• Scrap metal		
	• Batteries		
	• Light bulbs		
	• Toner cartridges		
	• Tires		
	• Trash		
	• Electrical wiring		
	• Electronics including monitors		
	• Deicing fluid and antifreeze		
	• Water, grease, sludge for recycling		
	• Hazardous materials and spent-solvents		
	• Replace toxic chemicals with non-toxic chemicals.		
	• Discontinue use of lead-based paint.		
	• Instruct users and occupants on recycling procedures.		
	• Evaluate cardboard balers, aluminum can crushers, recycling chutes and other technologies to enhance recycling activities.		
9.02	Resource Use Reduction		
9.02.01	Use printers that defaulting to double sided copying		
9.02.02	Utilize CDs, Inter- and Intranet, FTP sites and other IT systems to exchange information to reduce paper use		
9.02.03	Use environmentally friendly and renewable inks and printer cartridges		
9.02.04	Provide incentives to concessionaires to minimize packaging		
9.03	Structure & Building Reuse		
9.03.01	Re-use existing structures		
9.03.02	Re-use existing runway (i.e., for taxiways) and infrastructure		

10. Construction Practices

Sustainable initiatives for construction practices involve recycling recovered resources (construction waste management), specifying environmentally responsible material content (such as use of recycled materials, rapidly renewable materials, certified wood produced under environmentally responsible forest management, and salvaged materials and resources), planning for deconstruction to ensure building disassembly facilitates resource reuse, minimizing impacts from construction vehicles (clean fuel construction vehicle usage and alternative transportation to minimize traffic), minimizing construction noise impacts, and properly maintaining construction equipment to minimize environmental impacts.

Ref. No.	Sustainable Initiative	Goal	In Place
10.01	Construction Waste Management		
10.01.01	Develop a balanced earthwork plan (keep as much excavated earth on-site as possible to reduce off-site hauling).		
10.01.02	Evaluate (at a minimum) the following waste for recycling:		
	• Land-clearing debris		
	• Cardboard		
	• Metal		
	• Brick		
	• Concrete		
	• Asphalt		
	• Plastic		
	• Clean wood		
	• Glass		
	• Gypsum wallboard		
	• Carpet		
	• Insulation		
10.01.03	Require haulers to cover truck beds for dust suppression.		
10.01.04	Require truck beds to maintain at least two feet of freeboard for dust suppression		
10.01.05	Re-use of project waste as a resource to another project such as:		
	• Concrete		
	• Asphalt		
	• Land and clearing debris		
	• Small ancillary buildings or structures		
	• Building components		
10.01.06	Designate a specific site area for recycling construction waste.		
10.01.07	Designate hazardous waste containment areas		
10.01.08	Designate special waste containment areas (medical, industrial, pollution.)		
10.01.09	Designate permanent central storage area or secondary containment area.		
10.01.10	Track recycling efforts throughout the construction process.		
10.02	4.4 Recycled Content		
10.02.01	Established project goals for recycled content materials.		
10.02.02	Consider the following major building components:		
	• Aggregate in cast in place concrete		
	• Fly-ash in cast in place concrete		
	• Aggregate in pre-cast concrete		
	• Fly-ash in pre-cast concrete		
	• Bituminous concrete pavement		
	• Unit pavers		
	• Steel reinforcement		
	• Structural steel		
	• Miscellaneous steel		

Ref. No.	Sustainable Initiative	Goal	In Place
	<ul style="list-style-type: none"> Steel fencing and furnishings 		
	<ul style="list-style-type: none"> Unit masonry 		
	<ul style="list-style-type: none"> Ductile iron pipe 		
	<ul style="list-style-type: none"> Aluminum products 		
	<ul style="list-style-type: none"> Site generated broken concrete for gabions 		
	<ul style="list-style-type: none"> Railroad rails 		
	<ul style="list-style-type: none"> Railroad ties 		
	<ul style="list-style-type: none"> Railroad track base material 		
	<ul style="list-style-type: none"> Steel doors and frames 		
	<ul style="list-style-type: none"> Aluminum doors and windows 		
	<ul style="list-style-type: none"> Plaster 		
	<ul style="list-style-type: none"> Terrazzo 		
	<ul style="list-style-type: none"> Acoustical ceilings 		
	<ul style="list-style-type: none"> Drywall 		
	<ul style="list-style-type: none"> Finish flooring including carpet, resilient flooring, and terrazzo 		
	<ul style="list-style-type: none"> Toilet and shower compartments 		
	<ul style="list-style-type: none"> Special finishes 		
	<ul style="list-style-type: none"> Equipment 		
	<ul style="list-style-type: none"> Sheet metal ductwork 		
	<ul style="list-style-type: none"> Site lighting 		
10.03	Local/Regional		
10.03.01	Use of the following local/regionally available materials:		
	<ul style="list-style-type: none"> Concrete 		
	<ul style="list-style-type: none"> Asphalt 		
	<ul style="list-style-type: none"> Structural Steel 		
	<ul style="list-style-type: none"> Masonry 		
	<ul style="list-style-type: none"> Post-industrial recycled gypsum wallboard 		
	<ul style="list-style-type: none"> Storm system concrete pipes of all sizes 		
	<ul style="list-style-type: none"> Manholes and handholes 		
	<ul style="list-style-type: none"> Electrical ductbanks 		
	<ul style="list-style-type: none"> Cable 		
	<ul style="list-style-type: none"> Gas and water piping 		
	<ul style="list-style-type: none"> Rail tracks 		
	<ul style="list-style-type: none"> Rail ties 		
	<ul style="list-style-type: none"> Rail ballast 		
	<ul style="list-style-type: none"> Landscape material and seed 		
10.04	Rapidly Renewable Materials		
10.04.01	Use of the following materials for contributions to this goal for both permanent and temporary construction materials:		
	<ul style="list-style-type: none"> Formwork, temporary construction and underlayment 		
	<ul style="list-style-type: none"> Poplar OSB 		
	<ul style="list-style-type: none"> Straw board or "agriboard" 		
	<ul style="list-style-type: none"> Bamboo flooring 		
	<ul style="list-style-type: none"> Cork 		
	<ul style="list-style-type: none"> Wool carpets and fabrics 		
	<ul style="list-style-type: none"> Cotton-batt insulation 		
	<ul style="list-style-type: none"> Linoleum flooring 		
	<ul style="list-style-type: none"> Sunflower seed board 		
	<ul style="list-style-type: none"> Wheat grass or Straw board cabinetry and others. 		
10.05	Certified Wood		
10.05.01	Established a Forest Stewardship Council (FSC) certified wood products goal.		
10.05.02	Use of FSC products in construction materials; finish products, and		

Ref. No.	Sustainable Initiative	Goal	In Place
	temporary construction materials that meet the goals.		
10.05.03	Use of FSC products in temporary construction materials that may be applicable.		
10.06	Salvaged Materials and Resources		
10.06.01	Advertisement of salvage activities prior to demolition activities to encourage salvaged materials re-use.		
10.06.02	Use of a public information site or other means to list salvaged materials to offer for sale or donation.		
10.07	Planning for Deconstruction		
10.07.01	Plan for potential future uses for the structure and building components.		
10.07.02	Use of homogenous material whenever possible.		
10.07.03	Detail connections for disassembly.		
10.07.04	Provide a flexible structural system for future use considerations.		
10.08	Clean Fuel Construction Vehicles		
10.08.01	Use of construction vehicles that use high technology diesel emissions traps and/or oxidation catalysts.		
10.08.02	Use of ultra low sulfur diesel (ULSD) in construction vehicles.		
10.08.03	Use of clean fuel engines in lieu of diesel in construction vehicles.		
10.08.04	Require construction vehicles to limit idle times.		
10.09	Alternative Transportation During Construction		
10.09.01	Provide for consolidated construction employee private vehicle parking/staging areas with regular shuttles during construction.		
10.09.02	Support use of 'mass' transportation to and from the construction site with use of regular shuttles or other means.		
10.09.03	Include bike racks at construction staging locations.		
10.09.04	Provide for off-site parking with regular shuttles.		
10.09.05	Provide preferential parking for construction employee car-poolers.		
10.10	Construction Materials Conveying		
10.10.01	Use of a conveyor in construction logistics and staging plans		
10.11	Construction Noise and Acoustical Quality		
10.11.01	Develop sound reduction construction plans to mitigate unwanted construction noise.		
10.11.02	Require mufflers on all construction equipment.		
10.11.03	Establish construction vehicle speed limits.		
10.12	Construction Equipment Maintenance		
10.12.01	Use of recycled oil and environmentally friendly maintenance agents during construction.		
10.12.02	Provide retrofit allowances for construction equipment.		
10.13	Construction Indoor Air Quality Management Plan		
10.13.01	During construction meet or exceed the recommended Design Approaches of the Sheet Metal and air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3.		
10.13.02	Protect stored on-site or installed absorptive materials from moisture damage.		
10.13.03	As much as possible, do not operate air-handling equipment during construction.		
10.13.04	Sequence the installation of materials to avoid contamination.		
10.13.05	If air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return air grill, as determined by ASHRAE 52.2-1999.		
10.13.06	Replace all filtration media immediately prior to occupancy.		
10.13.07	Evaluate conducting a two-week building flush out with 100% outside air.		