Transitioning Airport Sustainable Planning, Design & Construction Guidelines for Municipal Use

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Los Angeles World Airports

Airports are little cities unto themselves. Many are even large enough to have their own zip codes. With so many people coming in and out, cars dropping off and picking up, and planes departing and landing, airports produce a whole lot of air pollution and physical trash.

Green Airports Initiative, Aug 20, 2009
LAWA

- LAWA is a branch of the City of Los Angeles and is governed by a seven-member airport commissioners board. This board is appointed by the mayor of Los Angeles and approved by Los Angeles City Council.

- LAWA employs close to 2,500 employees who work for the four airports under its control.

- Revenues are collected from aircraft landing fees in addition to leases and concession fees from airport tenants.

- Expenditures include runway and building maintenance fees, and administrative expenses.
How big is LAX?

REALLY BIG

- 5th largest airport in the world by passengers (ATL, Chicago, London, Tokyo)
- 4th largest airport by aircraft movements
Now is the Time
Presentation Overview

I. Sustainability at LAWA
   - Drivers
     - What does sustainability mean to LAWA?

II. Guidelines in Depth
   - Development
   - Content
   - Implementation

III. Transitioning the Guidelines for Municipal Use
Drivers for Sustainability

- **Drivers include:**
  - Mayor’s Directive
  - City Council
  - BOAC
  - Aviation Industry

- **The right thing to do**

*Sustainability at LAWA - Guidelines in Depth - Transition*
Sustainable development ... meets the needs of the present without compromising the ability of future generations to meet their own needs.

Bruntland Commission, 1987
Triple Bottom Line (TBL)

ECONOMIC GROWTH
+ ENVIRONMENTAL STEWARDSHIP
+ SOCIAL RESPONSIBILITY

the “Triple Bottom Line”
EONS

- Economic Viability
- Operational efficiency
- Natural resources
- Socioeconomic responsibility

- EONS ≈ Triple Bottom Line + Operations + Financial Success

Sustainability at LAWA - Guidelines in Depth - Transition
LAWA’s Sustainability Vision

Based on the Triple Bottom Line

Our Sustainability Vision
As the international gateway in our region, Los Angeles World Airports is committed to setting the global airport standard for customer satisfaction and security, regional economic leadership and organizational performance. Building on our core values, we will engage our employees, tenants, customers, and communities in an effort to continually improve our environmental, economic and social performance.

Our Sustainability Principles
We will foster stewardship and continual performance improvement at all levels within LAWAs organization by complying with applicable legal requirements, integrating sustainable practices into our operations and administrative processes, communicating our endeavors, and following these principles:

- Becoming an innovative and national model in implementing environmental solutions.
- Taking responsibility for improving our overall operational sustainability.
- Increasing our business value through improved sustainable performance.
- Engaging our stakeholders to better understand and address their concerns.
- Incorporating sustainable design and construction practices in the development of our airport system.
- Monitoring and measuring our progress through our sustainability performance improvement management system.
Desired Outcomes

- Public Benefits
- Waste Reduction
- Resource Efficiency
- Beneficial Land Reuse
- Minimization of Carbon & Water Footprints
- Prevention of Further Pollution
- Conservation & Protection of Natural Resources
- Advancement of Renewable Energy
- Cost Savings
- Stakeholder Engagement
- Strengthening of Economies
- Community Outreach
Approach to Sustainability

Sustainability Performance Improvement Management System

- **Engage Stakeholders**
  - Awareness Building

- **Develop Strategy**
  - Conduct Assessment
  - Identify Opportunities
  - Establish Objectives & Targets
  - Implement Initiatives
  - Monitor Performance
  - Communicate Progress

- **Continual Improvement**
  - Culture Change

Sustainability at LAWA - Guidelines in Depth - Transition
Development of the *Guidelines*

**Purpose**

<table>
<thead>
<tr>
<th>Provide a comprehensive set of performance standards</th>
<th>Provide a rating system</th>
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</thead>
<tbody>
<tr>
<td>- Sustainability-focused practices for <em>projects</em></td>
<td>- Consistently measure success</td>
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<tr>
<td>- Airport-specific</td>
<td>- Communicate progress</td>
</tr>
<tr>
<td>- <em>Beyond LEED®</em></td>
<td>- Continually improve processes</td>
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</tbody>
</table>

Sustainability at LAWA - *Guidelines in Depth* - Transition
Development of the *Guidelines*

References

- USGBC
  - LEED®-NC
  - LEED®-EB
  - LEED®-CI
  - LEED®-CS
  - LEED®-ND
- ORD
- PANYNJ
- ACI
- USEPA
- AASHTO
- USACE
- GRI
- WRI
- FIDIC
- Univ. of Washington
- Univ. of California
- Penn State Univ.
- Many others…
Content of the Guidelines

- Two components:
  - Planning & Design (PD)
  - Construction (CN)

- 137 performance standards
  - 87: PD (18 Categories)
  - 43: CN (16 Categories)
Content of the Guidelines

Each performance standard includes:

- Intent
- Benefits
- Point Allocation
- Actions & Targets
- Documentation
- Technical Approaches
- Specific References

<table>
<thead>
<tr>
<th>PD14-MR-14</th>
<th>Materials &amp; Resources: Flexible Systems, Spaces &amp; Infrastructure</th>
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</thead>
<tbody>
<tr>
<td><strong>INTENT</strong></td>
<td>Create flexible systems, spaces and infrastructure to enhance resource efficiency related to future uses, upgrades and expansions.</td>
</tr>
<tr>
<td><strong>POINT ALLOCATION</strong></td>
<td>1 Potential Planning &amp; Design Point</td>
</tr>
<tr>
<td><strong>ACTIONS &amp; TARGETS</strong></td>
<td>To achieve points, comply with the following:</td>
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<tr>
<td>- Evaluate potential future uses for the structure, building components and mechanical/electrical/plumbing systems; AND</td>
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<tr>
<td>- Specify flexible components of HVAC, electrical and fiber optics and other wiring; AND</td>
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<td>- Detail system connectors for future changes, ensuring that connections are accessible; AND</td>
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<tr>
<td>- Strategically locate load-bearing walls.</td>
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<tr>
<td><strong>BENEFITS</strong></td>
<td>- Reduces environmental impacts of producing new construction products and materials</td>
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<tr>
<td>- Decreases future building costs.</td>
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<tr>
<td>- Increases possibility of reuse/organization/expansion of downsizing of structures.</td>
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<tr>
<td>- Encourages repair/implementation/reuse of components with a spare.</td>
<td></td>
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<tr>
<td>- Diverts construction waste from landfills and incinerators.</td>
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</tr>
<tr>
<td>- Reduces future liability for waste.</td>
<td></td>
</tr>
<tr>
<td><strong>TECHNICAL APPROACHES</strong></td>
<td>- Design for current needs with the ability to expand into the future. Do not oversize components during initial design phase to account for future build-out.</td>
</tr>
<tr>
<td>- Design HVAC system in such a way that it is flexible to expand or downsize if depending on the future need of the space.</td>
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<tr>
<td>- Design AC roof units so additional units may be placed, if necessary in the future.</td>
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<tr>
<td>- Design for additional temperature zones in a large space so that future renovation work will have adequate ventilation and heat.</td>
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<tr>
<td>- Place entrance to space in such a way that future use may utilize existing egresses.</td>
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<tr>
<td>- Place windows in new construction projects with appropriate spacing for future placement of dividers or permanent walls.</td>
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<tr>
<td>- Consider structure and component life cycle.</td>
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<tr>
<td>- Create touchdown spaces or other flexible and diverse workspaces to enable ad-hoc collaborations and enhance opportunities for intense, efficient use of facilities.</td>
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<tr>
<td>- Consider the future value of materials and systems during selection.</td>
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<tr>
<td>- Use homogenous material whenever possible.</td>
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<tr>
<td>- Label components clearly and permanently that are meant for reuse where possible, include instructions if necessary. Coordinate with PD16-IC-1, Operations &amp; Maintenance Program.</td>
<td></td>
</tr>
<tr>
<td>- Detail connections for future expansion or</td>
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</tbody>
</table>

Sustainability at LAWA - *Guidelines in Depth* - Transition
Planning and Design Guidelines

- Project Implementation
- General Planning
- Airside Planning
- Landside Planning
- Climate Change Adaptation
- Stormwater Management & Erosion Control
- Landscape Design
- Water Efficiency & Conservation
- Heat Island Reduction
- Interior & Exterior Lighting
- Noise Pollution Reduction
- Energy Efficiency & Conservation
- Emission Impact Evaluation & Mitigation
- Materials & Resources
- Indoor Environmental Quality
- Post-Construction Maintenance, Monitoring & Reporting
- Social Responsibility
- Additional Planning & Design Elements
Planning and Design Guidelines

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  - Heat Island Reduction
  - Interior & Exterior Lighting
  - Noise Pollution Reduction

- Energy Efficiency & Conservation
  - Energy Efficiency & Conservation
  - Emission Impact Evaluation & Mitigation
  - Materials & Resources
  - Indoor Environmental Quality
  - Post-Construction Maintenance, Monitoring & Reporting
  - Social Responsibility
  - Additional Planning & Design Elements

- Planning and Design Guidelines
  - Engage Stakeholders
  - Sustainability Meetings
  - Double-sided Printing/Recycled Paper
  - Electronic Submissions & Meetings

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Planning and Design Guidelines

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- Emission Impact Evaluation & Mitigation
- Materials & Resources
- Indoor Environmental Quality
- Post-Construction Maintenance, Monitoring & Reporting
- Social Responsibility
- Additional Planning & Design Elements

- Minimize impervious pavement
- Avoid development of inappropriate sites
- Contaminated Site Redevelopment
- Community Education
- Site Protection & Restoration
- Integrated Vegetation & Wildlife Management
### Planning and Design Guidelines

- Project Implementation
- General Planning
- Airside Planning
- **Landside Planning**
  - Climate Change Adaptation
  - Stormwater Control
  - Landscape Design
  - Water Efficiency & Conservation
  - Heat Island Reduction
  - Interior & Exterior Lighting
  - Noise Pollution Reduction

- Energy Efficiency & Conservation
- Emission Impact Evaluation & Mitigation
- Materials & Resources Management
- Indoor Environmental Quality
- Production Maintenance, Monitoring & Reporting
- Social Responsibility
- Additional Planning & Design Elements

- **Minimize Traffic Congestion**
- **Design Roads for Increased Life Cycle**
- **Support Fuel Efficient Vehicles**
- **Planning for Future Land Use**

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Planning and Design Guidelines

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- **Landscape Design**
- Water Efficiency & Conservation
- Heat Island Reduction
- Interior & Exterior Lighting
- Noise Pollution Reduction
- Energy Efficiency & Conservation
- Emission Impact Evaluation & Mitigation
- Materials & Resources
- Indoor Environmental Quality
- Post-Construction Maintenance, Monitoring & Reporting

- **Additional Planning & Design Elements**

  - Reduce/Eliminate Potable Water Use
  - Impact of Fertilizer Use
  - Infrastructure for Composting & Vermiculture

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Planning and Design Guidelines

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- Water Efficiency & Conservation
- Heat Island Reduction
- Interior & Exterior Lighting
- Noise Pollution Reduction
- Energy Efficiency & Conservation
- Emission Impact Evaluation & Mitigation
- Materials & Resources
- Indoor Environmental Quality
- Post-Construction Maintenance, Monitoring & Reporting
- Social Responsibility
- Additional Planning & Design Elements

- Waste Reduction & Management
- Material Durability
- Building Reuse
- Recycled Content
- Road Design
- Regional Materials

Sustainability at LAWA - *Guidelines in Depth* - Transition
Construction Guidelines

- Project Logistics
- Contractor Sustainability Requirements
- Stormwater Management & Erosion Control
- Water Conservation
- Indoor Air Quality
- Waste Management
- Construction Vehicles
- Construction Equipment
- Emission Impact Evaluation & Mitigation
- Materials Conveying
- Construction Noise Control
- Construction Lighting
- Landscape Maintenance
- Health & Safety
- Construction Roadways
- Social Responsibility
- Additional Construction Elements
Construction Guidelines

- Project Logistics
- Contractor Sustainability Requirements
- Stormwater Management & Erosion Control
- Water Conservation
- Indoor Air Quality
- Waste Management
- Construction Vehicles
- Construction Equipment

- Emission Impact Evaluation & Mitigation
- Materials Conveying
- Construction Noise Control
- Construction Lighting
- Landscape Maintenance
- Health & Safety
- Construction Roadways
- Social Responsibility
- Additional Construction Elements

- Sustainability Training
- Sustainability Inspection Programs
- Sequencing & Scheduling
- Paperless Submittals/Correspondence

Sustainability at LAWA - Guidelines in Depth - Transition
Construction Guidelines

- Project Logistics
- Contractor Sustainability Requirements
- Stormwater Management & Erosion Control
- Water Conservation
- Indoor Air Quality
- **Waste Management**
- Construction Vehicles
- Construction Equipment

- Emission Impact Evaluation & Mitigation
- Materials Conveying
- Construction Noise Control
- Construction Lighting
- Landscape Maintenance
- Health & Safety
- Construction Roadways

**Additional Construction Elements**

- Recycle & Reuse
- Salvage Materials and Resources
- Comprehensive Soil Management

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- Construction Vehicles
- Construction Equipment
- Emission Impact Evaluation & Mitigation
- Materials Conveying
- Construction Noise Control
- Construction Lighting
- Construction Roadways
- Social Responsibility
- Additional Construction Elements

- Reduced Idling
- Low-emission Vehicles
- Retrofit Vehicles
- Alternative Transportation
Construction Guidelines

- Project Logistics
- Contractor Sustainability Requirements
- Stormwater Management & Erosion Control
- Water Conservation
- Indoor Air Quality
- Waste Management
- Construction Vehicles
- Construction Equipment
- Emission Impact Evaluation & Mitigation
  - Refrigerant/Ozone
  - GHG
  - Criteria & Air Toxics
- Materials Conveying
- Construction Noise Control
- Construction Lighting
- Landscape Maintenance
- Health & Safety
- Construction Roadways
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- Additional Construction Elements

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- Construction Equipment
- Emission Inventory & Mitigation
- Materials Conveying
- Construction Noise Control
- Construction Lighting
- Landscape Maintenance
- Health & Safety
- Construction Roadways
- Social Responsibility
- Additional Construction Elements

- Continuity of Area Services
- Local Contractors/Suppliers
Implementation of the Guidelines

Implementation Strategy Includes:

- Stakeholder Engagement
- Roles and Responsibilities
- Sustainability Meetings
- Tracking Progress
- Certification
# Implementation of the Guidelines: Checklists

## SUSTAINABLE CONSTRUCTION CHECKLIST

**Project Name:**

**Date:**

☐ Draft Date: __________________

☐ Final (Please sign last page)

*Performance Standard has a points schedule*

<table>
<thead>
<tr>
<th>Required</th>
<th>Project Goal</th>
<th>Performance Standard</th>
<th>Points</th>
<th>Responsible Party</th>
<th>Technical Approach</th>
<th>Status/% Progress</th>
<th>Verified (Initial)</th>
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<tr>
<td></td>
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<td><strong>Project Logistics</strong></td>
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<td>✔</td>
<td></td>
<td>CN1-PL-1 Develop &amp; Implement Sustainable Construction Training</td>
<td>N/A</td>
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<td>CN1-PL-2 Implement a Sustainability Inspection Program</td>
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<td>CN1-PL-3 Construction Scheduling &amp; Sequencing</td>
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<td>CN1-PL-4 Paperless Submittals &amp; Change Orders</td>
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<td><strong>Contractor Sustainability Requirements</strong></td>
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<td>CN2-CS-1 Contractor Sustainability Experience/Performance Requirement</td>
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</tbody>
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Sustainability at LAWA - *Guidelines in Depth* - Transition
Transitioning LAWA Sustainable Guidelines

Current Valley-Wide Municipal Strategies

- Evaluate transit routes
- Adaptive Reuse Strategies
- Zoning
- Develop incentives/awards to development community
- Green collar job training
Transitioning the *Guidelines*

Examples of Airport Performance Standards applicable to Municipalities

- Encourage structured parking
- Encourage waste reduction by charging by the bag (no charge for recycling)
- City-wide composting & vermiculture
- Install turf to eliminate the need for landscaping
- Utilize warm mix asphalt to reduce construction emissions
- Flexible buildings & infrastructure
Thank you for your time . . .
For more information please contact:

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