



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

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September 16, 2009

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

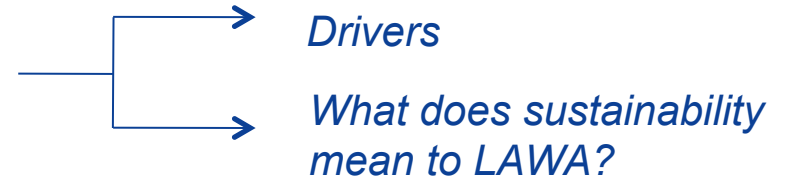
CDM



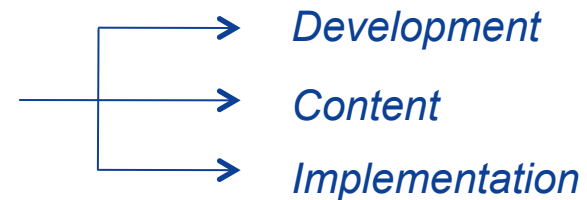
Presentation Overview



I. Sustainability at LAWA



II. Guidelines in Depth



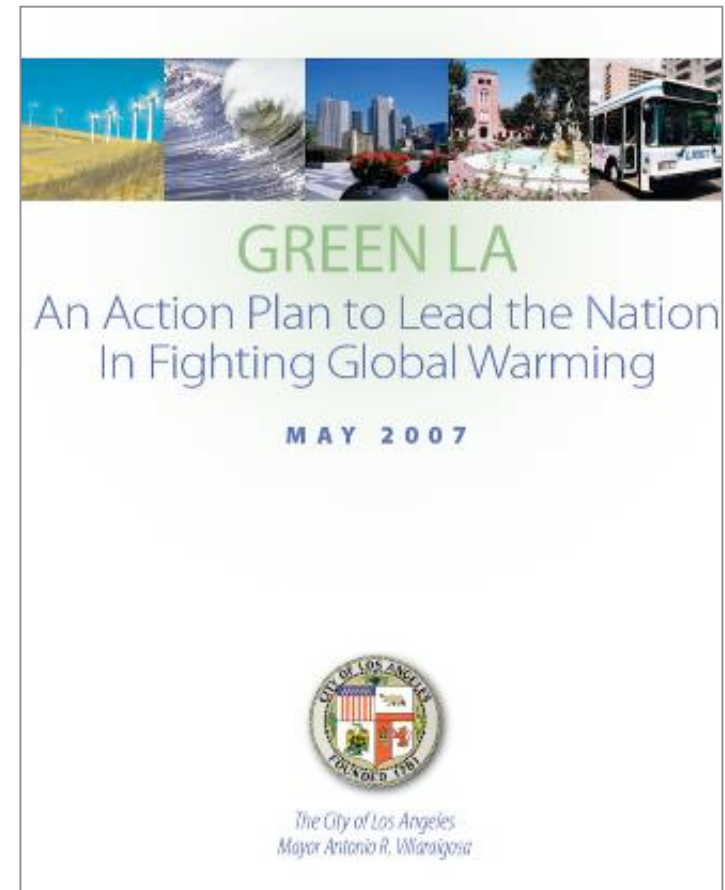
III. Transitioning the Guidelines for Municipal Use

Drivers for Sustainability

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

- *The right thing to do*



Roots of Sustainability

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)

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ECONOMIC GROWTH

+ ENVIRONMENTAL STEWARDSHIP

+ SOCIAL RESPONSIBILITY

the “Triple Bottom Line”

EONS

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EONS

Economic Viability

Operational efficiency

Natural resources

Socioeconomic responsibility

❖ *EONS ≈ Triple Bottom Line + Operations + Financial Success*

LAWA's Sustainability Vision

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- Based on the Triple Bottom Line



Los Angeles World Airports Sustainability Vision and Principles

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 LAWA's 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

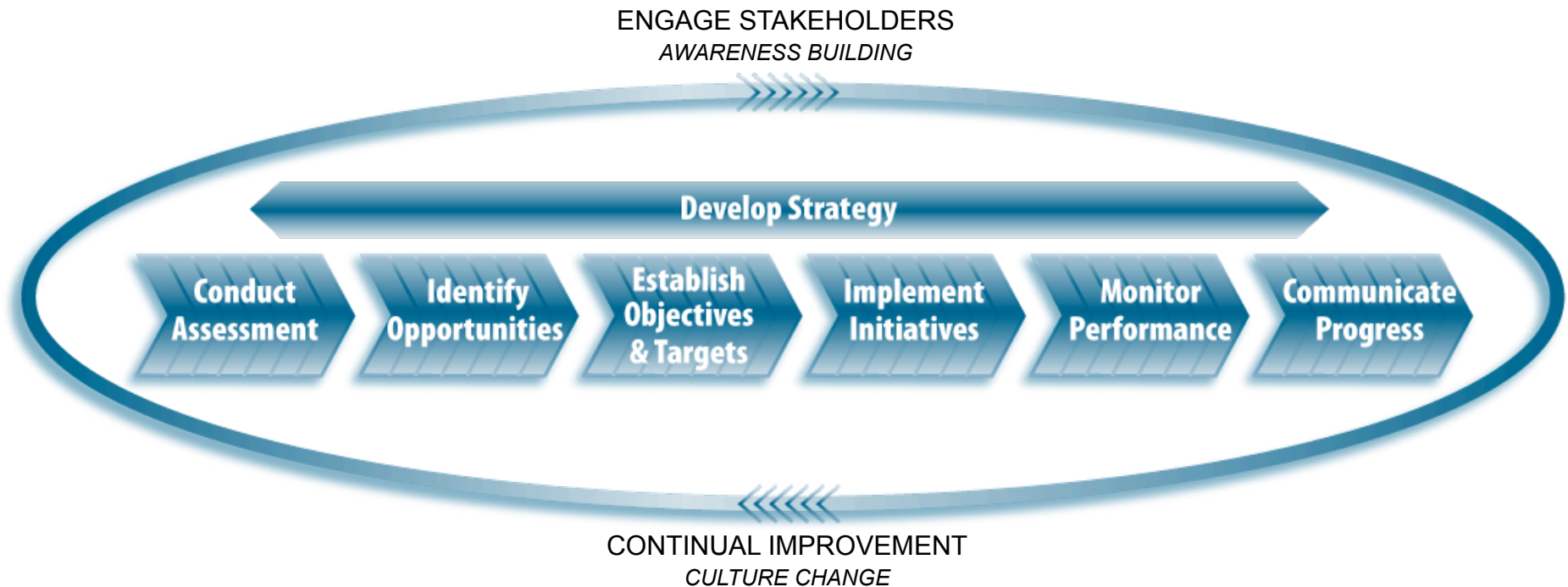
- Public Benefits ●●
- Waste Reduction ●●●
- Resource Efficiency ●●●
- Beneficial Land Reuse ●●●
- Minimization of Carbon & Water Footprints ●●●
- Prevention of Further Pollution ●●●
- Conservation & Protection of Natural Resources ●●●
- Advancement of Renewable Energy ●●●
- Cost Savings ●●
- Stakeholder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



Approach to Sustainability

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Sustainability Performance Improvement Management System



Development of the *Guidelines*

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Purpose

<i>Provide a comprehensive set of performance standards</i>	<i>Provide a rating system</i>
<ul style="list-style-type: none">- Sustainability-focused practices for <i>projects</i>- Airport-specific- <i>Beyond LEED®</i>	<ul style="list-style-type: none">- Consistently measure success- Communicate progress- Continually improve processes

Development of the *Guidelines*

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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...

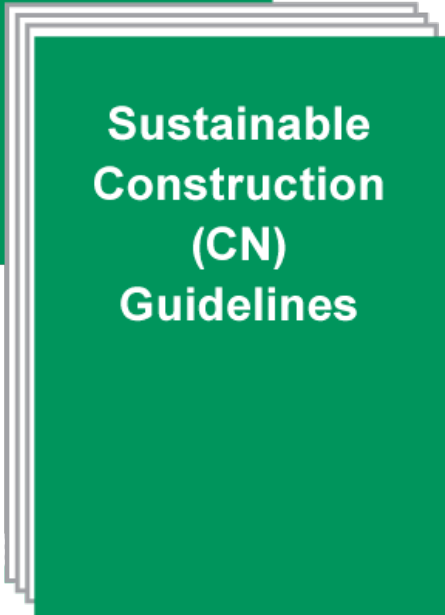
Content of the *Guidelines*

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- Two components:
 - Planning & Design (PD)
 - Construction (CN)
- 137 performance standards
 - 87: PD (*18 Categories*)
 - 43: CN (*16 Categories*)



**Sustainable
Planning and
Design (PD)
Guidelines**



**Sustainable
Construction
(CN)
Guidelines**

Content of the *Guidelines*

Each performance standard includes:

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

PD14-MR-14 Materials & Resources: Flexible Systems, Spaces & Infrastructure	
INTENT Create flexible systems, spaces and infrastructure to enhance resource efficiency related to future uses, upgrades and expansions.	POINT ALLOCATION 1 Potential Planning & Design Point
ACTIONS & TARGETS To achieve points, comply with the following: <ul style="list-style-type: none"> Evaluate potential future uses for the structure, building components and mechanical/electrical/plumbing systems; AND Specify flexible components of HVAC, electrical and fiber optics and other wiring; AND Detail system connectors for future changes, ensuring that connections are accessible; AND Strategically locate load-bearing walls. 	BENEFITS <ul style="list-style-type: none"> Reduces environmental impacts of producing new construction products and materials. Decreases future building costs. Increases possibility of reuse/reorganization/expansion/down sizing of structures. Encourages repair/replacement/reuse of components with a space. Diverts construction waste from landfills and incinerators. Reduces future liability for waste.
TECHNICAL APPROACHES <ul style="list-style-type: none"> 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. Design HVAC system in such a way that it is flexible to expand or downsize it depending on the future need of the space. Design AC roof units so additional units may be placed, if necessary in the future. Design for additional temperature zones in a large space so that future renovation work will have adequate ventilation and heat. Place entrances to space in such a way that future uses may utilize existing egresses. Place windows in new construction projects with appropriate spacing for future placement of dividers or permanent walls. Consider structure and component life cycle. Create touchdown spaces or other flexible and diverse workspaces to enable ad-hoc collaborations and enhance opportunities for intense, efficient use of facilities. Consider the future value of materials and systems during selection. Use homogenous material whenever possible. Label components clearly and permanently that are meant for reuse where possible, include instructions if necessary. Coordinate with PD16-PC-1, Operations & Maintenance Program. Detail connections for future expansion or 	DOCUMENTATION <ul style="list-style-type: none"> Narrative guide to future structure uses, include instructions and plans for internal reconfigurations to meet projected needs, instructions for additions and subtractions to the structure and instructions for disassembly, reuse and recycling of building components. Project drawings that detail systems designed to be expanded or downsized, provide special emphasis on location of connectors.

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

CDM

■ **Project Implementation**

■ General Planning

■ Airside Planning

■ Landside Planning

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■ Landscape Design

■ Water Efficiency & Conservation

■ Heat Island Reduction

■ Interior & Exterior Lighting

■ Noise Pollution Reduction

■ Energy Efficiency & Conservation

■ Project Evaluation &

■ Materials & Resources

■ Indoor Environmental Quality

■ Post-Construction Maintenance, Monitoring & Reporting

■ Social Responsibility

■ Additional Planning & Design Elements

- **Engage Stakeholders**
- **Sustainability Meetings**
- **Double-sided Printing/Recycled Paper**
- **Electronic Submissions & Meetings**

Planning and Design Guidelines

CDM

- Project Implementation
- **General Planning**
- Airside Planning
 - Minimize impervious pavement
 - Avoid development of inappropriate sites
 - Contaminated Site Redevelopment
- Landside Planning
 - Community Education
 - Site Protection & Restoration
 - Integrated Vegetation & Wildlife Management
- Climate Change
- Stormwater Control
- Landscape Design
- Water Efficiency & Conservation
- Heat Island Reduction
- Interior & Exterior Lighting
- Noise Pollution Reduction
- Energy Efficiency & Conservation
- Impact Evaluation &
- Resources
- Environmental Quality
- Construction Maintenance, Monitoring & Reporting
- Social Responsibility
- Additional Planning & Design Elements

Planning and Design Guidelines

CDM

- Project Implementation
- General Planning
- Airside Planning
- **Landside Planning**
 - **Minimize Traffic Congestion**
 - **Design Roads for Increased Life Cycle**
 - **Support Fuel Efficient Vehicles**
 - **Planning for Future Land Use**
- Climate Change Adaptation
- Stormwater Control
- Landscape Design
- Water Efficiency & Conservation
- Heat Island Reduction
- Interior & Exterior Lighting
- Noise Pollution Reduction
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Planning and Design Guidelines

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- Materials & Resources
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- Post-Construction Maintenance, Monitoring & Reporting

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

Planning and Design Guidelines

CDM

- Project Implementation
- General Planning
- Airside Planning
- Landside Planning
- Climate Change Adaptation
- Stormwater Management & Erosion Control
- Land Use Planning
- Water Management
- Health & Safety
- 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**

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 Requirements
 - Sustainability Training
 - Sustainability Inspection Programs
 - Sequencing & Scheduling
 - Paperless Submittals/Correspondence
- Stormwater Erosion Control
- Water Conservation
- Indoor Air Quality
- Waste Management
- Construction Vehicles
- Construction Equipment
- Emission Impact Evaluation & Mitigation
- Surveying
- Noise Control
- Construction Lighting
- Landscape Maintenance
- Health & Safety
- Construction Roadways
- Social Responsibility
- Additional Construction Elements

Construction Guidelines

CDM

- Project Logistics
 - Contractor Sustainability Requirements
 - Stormwater Management & Erosion Control
 - Water Conservation
 - Indoor Air Quality
 - **Waste Management**
 - Construction Vehicle Responsibility
 - Construction Ecology
 - **Recycle & Reuse**
 - **Salvage Materials and Resources**
 - **Comprehensive Soil Management**
 - Emission Impact Evaluation & Mitigation
 - Materials Conveying
 - Construction Noise Control
 - Construction Lighting
 - Landscape Maintenance
 - Health & Safety
 - Construction Roadways
- Elements

Construction Guidelines

CDM

- 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
- Maintenance
- Safety
- Construction Roadways
- Social Responsibility
- Additional Construction Elements

- **Reduced Idling**
- **Low-emission Vehicles**
- **Retrofit Vehicles**
- **Alternative Transportation**

Construction Guidelines

CDM

- Project Logistics
- Contractor Sustainability Requirements
 - Refrigerant/Ozone
 - GHG
 - Criteria & Air Toxics
- 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
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Construction Guidelines

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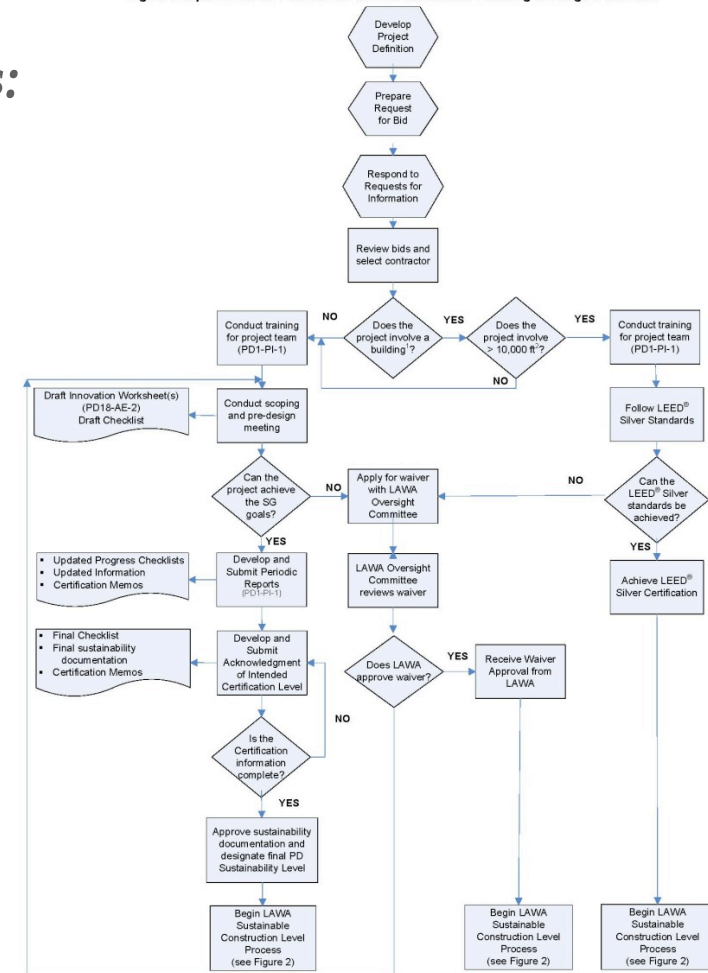
• **Continuity of Area Services**
• **Local Contractors/Suppliers**

Implementation of the *Guidelines*

Implementation Strategy Includes:

- ✓ Stakeholder Engagement
- ✓ Roles and Responsibilities
- ✓ Sustainability Meetings
- ✓ Tracking Progress
- ✓ Certification

Figure 1 Implementation Process for LAWA's Sustainable Planning & Design Guidelines



Implementation of the *Guidelines*: Checklists

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SUSTAINABLE CONSTRUCTION CHECKLIST

Project Name: _____

Date: _____

☐ Draft Date: _____ ☐ Final (Please sign last page)

* Performance Standard has a points schedule

Required	Project Goal			Performance Standard	Points		Responsible Party	Technical Approach	Status/% Progress	Verified (Initial)
	Y	?	N		Max	Goal				
Project Logistics										
✓				CN1-PL-1 Develop & Implement Sustainable Construction Training	N/A					
✓				CN1-PL-2 Implement a Sustainability Inspection Program	N/A					
				CN1-PL-3 Construction Scheduling & Sequencing	1					
				CN1-PL-4 Paperless Submittals & Change Orders	1					
Contractor Sustainability Requirements										
				CN2-CS-1 Contractor Sustainability Experience/Performance Requirement *	2					

Transitioning LAWA Sustainable Guidelines

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Current Valley-Wide Municipal Strategies

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

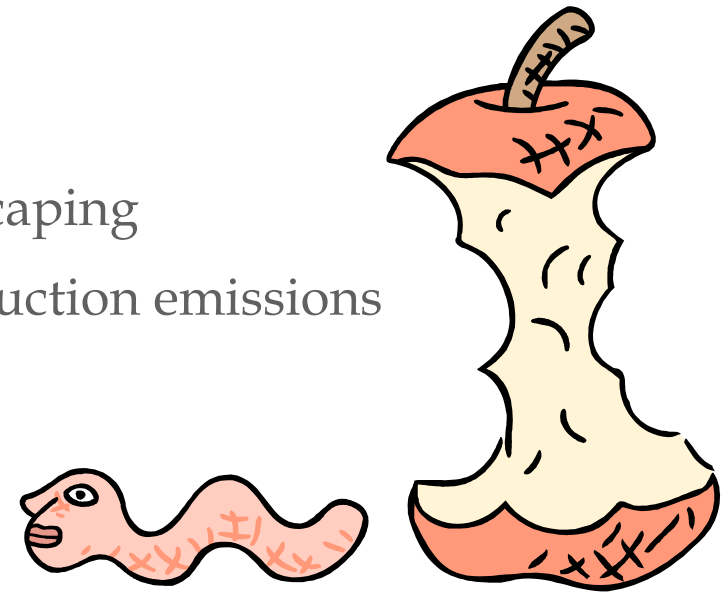


Transitioning the *Guidelines*

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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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