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- Direct additional questions on SITES to the website or to info@sustainablesites.org.

THE SUSTAINABLE SITES INITIATIVE™



An Overview

adapted with permission for a seminar sponsored by the University of Washington Botanic Gardens and the Washington Chapter of the American Society of Landscape Architects

The Science, Services and Performance of Sustainable Sites

presented by

David McDonald, Seattle Public Utilities May 18, 2011

How can I learn more about Sustainable Sites?

The website! www.sustainablesites.org

- **Background**
- **Case studies**
- **Guidelines (rating system)**
- **Pilot projects**
- ***and more!***

THE SUSTAINABLE SITES INITIATIVE™

An interdisciplinary effort to create voluntary national guidelines and a rating system for sustainable land design, construction and maintenance practices for landscapes of all types, with or without buildings

AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS | Lady Bird Johnson Wildflower center | UNITED STATES BOTANIC GARDEN

Success of Green Building

The construction market accounts for 13.4% of the U.S. GDP.

Source: Department of Commerce (2008). Annual Value of Construction Put in Place.

The value of green building construction is projected to increase to $60 billion by 2010.

Source: McGraw-Hill Construction (2008). Key Trends in the European and U.S. Construction Marketplace: SmartMarket Report.

Since 2000, USGBC's membership has more than quadrupled.

Source: U.S. Green Building Council, 2009

Sustainable Development

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Brundtland Report,
Our Common Future (1987)

Sustainable Sites Initiative
Guiding Principles

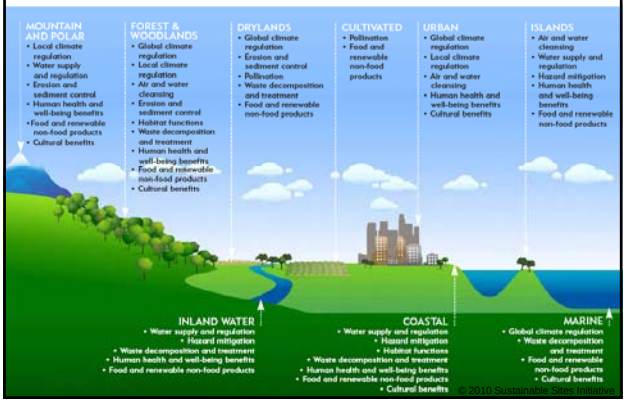
- Do no harm
- Use the precautionary principle
- Design with nature and culture
- Use a decision-making hierarchy of preservation, restoration and regeneration
- Provide regenerative systems as intergenerational equity
- Support a living process
- Use a systems thinking approach
- Use a collaborative and ethical approach
- Maintain integrity in leadership and research
- Instill a sense of stewardship

ECOSYSTEM SERVICES

Benefits that natural systems provide that **support our lives** and are often considered **"free"** and not a part of conventional accounting methods.

$16 - $54 trillion per/yr. Twice the Global GNP

Framework: protect and regenerate ecosystem services
nature as model, measure, and mentor



Framework: protect and regenerate ecosystem services
nature as model, measure, and mentor

- Regulate global and local climate
- Detoxify and cleanse air, soil and water
- Regulate water supply
- Control erosion and retain sediment
- Provide refuge and nursery habitat/ pollination services
- Decompose, treat, and re-use waste
- Provide human health and well-being benefits
- Provide food and non-food products
- Provide cultural, educational and aesthetic values
- Mitigate potential hazards

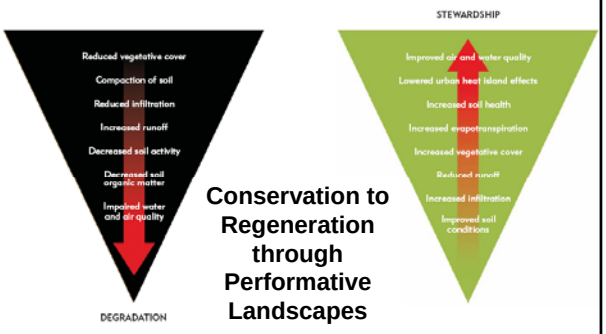
To become truly "sustainable", SITES aims to create a

PARADIGM CHANGE

Water	Energy	Habitat	Materials
1. Conserve	1. Reduce	1. Preserve	1. Reduce
2. Reuse	2. Renew	2. Protect	2. Reuse
3. Balance	3. Offset	3. Restore	3. Recycle
= Regenerate	= Produce	= Regenerate	= Upcycle

from CONSERVATION to REGENERATION

Paradigm Change



Conservation to Regeneration through Performative Landscapes

Make this… work more like this

Sustainable Sites Guidelines
Project Applications

- parks, trails, campgrounds
- industrial and office parks
- university & medical
- govt. & military facilities
  (Federal guidelines to be released 2011)
- conservation easements
- botanical gardens
- residential sites
- streetscapes & plazas

Sustainable Sites Initiative
Project Schedule

Formed in 2005, guidelines development work began 2006

1. **Guidelines and Performance Benchmarks 2009**
   Released November 2009
2. **Pilot Phase**
   June 2010 – June 2012
3. **Reference Guide**
   Target publication: 2012

Credit Categories

THE SUSTAINABLE SITES INITIATIVE
GUIDELINES AND PERFORMANCE BENCHMARKS 2009

Site Selection	*Preserve existing resources and repair damaged systems*	**21 poss. points**
Pre-Design Assessment and Planning	*Plan for sustainability from the onset of the project*	**4 poss. points**
Site Design – Water	*Protect and restore site's processes and systems*	**44 poss. points**
Site Design – Soil and Vegetation	*Protect and restore site's processes and systems*	**51 poss. points**
Site Design – Materials Selection	*Reuse/recycle and support sustainable production practices*	**36 poss. points**
Site Design – Human Health and Well-Being	*Build communities and a sense of stewardship*	**32 poss. points**
Construction	*Minimize effects of construction-related activities*	**21 poss. points**
Operations and Maintenance	*Maintain the site for long-term sustainability*	**23 poss. points**
Monitoring and Innovation	*Reward exceptional performance*	**18 poss. points**

Rating System

THE SUSTAINABLE SITES INITIATIVE
GUIDELINES AND PERFORMANCE BENCHMARKS 2009

- **250 point scale**
- **Recognize % of attainment**
- **Multiple point levels for many credits**
- **4 levels of certification**
  Prerequisites plus:
  ★ = 100 points (40%)
  ★★ = 125 points (50%)
  ★★★ = 150 points (60%)
  ★★★★ = 200 points (80%)

Guidelines & Performance Benchmarks 2009

- Credit Intent & Benefits
- Requirements
- Submittal Documentation
- Potential Technologies and Strategies
- Links to other Credits
- Resources

PREREQUISITES

Guidelines & Performance Benchmarks 2009

- Limit development of soils designated as prime farmland
- Protect floodplain functions
- Preserve wetlands
- Preserve threatened or endangered species and their habitats
- **Conduct a pre-design site assessment**
- **Use an integrated site development process**
- Reduce potable water consumption for irrigation by 50% from established baseline
- Control and manage known invasive plants found on site
- Use appropriate, non-invasive plants
- **Create a soil management plan**
- Eliminate the use of wood from threatened tree species
- Control and retain construction pollutants
- Restore soils disturbed during construction
- **Plan for sustainable landscape maintenance**
- Provide for storage and collection of recyclables

Guidelines and Performance Benchmarks 2009

Site Selection

Site Selection 21 possible points

Select locations to preserve existing resources and repair damaged systems

Prerequisite 1.1: Limit development of soils designated as prime farmland, unique farmland, and farmland of statewide importance

Prerequisite 1.2: Protect floodplain functions

Prerequisite 1.3: Preserve wetlands

Prerequisite 1.4: Preserve threatened or endangered species and their habitats

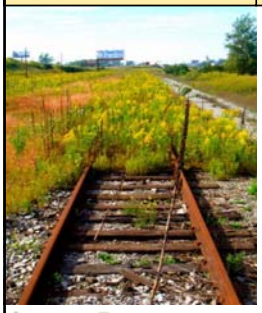
Credit 1.5: Select brownfields or greyfields for redevelopment (5–10 points)

Credit 1.6: Select sites within existing communities (6 points)

Credit 1.7: Select sites that encourage non-motorized transportation and use of public transit (5 points)

Guidelines and Performance Benchmarks 2009

CREDIT 1.5	Select brownfields or greyfields for redevelopment



Technologies and Strategies:

- During the site selection process, give preference to previously developed or brownfield sites
- Coordinate site development plans with remediation activity and use of existing infrastructure and materials, as appropriate

Guidelines and Performance Benchmarks 2009

Pre-Design Assessment & Planning

Pre-Design Assessment and Planning 4 possible points

Plan for sustainability from the onset of the project

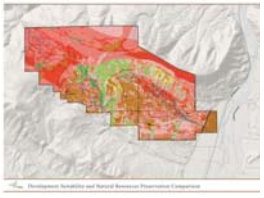
Prerequisite 2.1: Conduct a pre-design site assessment and explore opportunities for site sustainability

Prerequisite 2.2: Use an integrated site development process

Credit 2.3: Engage users and other stakeholders in site design (4 points)

Guidelines and Performance Benchmarks 2009

PREREQUISITE 2.1	Conduct a pre-design site assessment and explore opportunities for site sustainability



Technologies and Strategies:

- Use an integrated design team to thoroughly assess the site
- Consider sustainable design options linked to credit options
- Use SITES worksheet to ensure adequate coverage

Links to Prerequisite 2.2 - Use an integrated site development process

Guidelines and Performance Benchmarks 2009

Site Design - Water

Site Design—Water 44 possible points

Protect and restore processes and systems associated with a site's hydrology

Prerequisite 3.1: Reduce potable water use for landscape irrigation by 50 percent from established baseline
Credit 3.2: Reduce potable water use for landscape irrigation by 75 percent or more from established baseline (2–5 points)
Credit 3.3: Protect and restore riparian, wetland, and shoreline buffers (3–8 points)
Credit 3.4: Rehabilitate lost streams, wetlands, and shorelines (2–5 points)
Credit 3.5: Manage stormwater on site (5–10 points)
Credit 3.6: Protect and enhance on-site water resources and receiving water quality (3–9 points)
Credit 3.7: Design rainwater/stormwater features to provide a landscape amenity (1–3 points)
Credit 3.8: Maintain water features to conserve water and other resources (1–4 points)

Guidelines and Performance Benchmarks 2009

CREDIT 3.5	Manage Stormwater On Site

Credit 3.7 – Make stormwater management features visible, usable, and beautiful

Technologies and Strategies:

- **Replicate the hydrologic condition (infiltration, runoff, and evapo-transpiration) of the site based on undeveloped ecosystems in the region.**
- Minimize impervious cover, maximize pervious and vegetated cover
- Create on-site storage using ecologically-based features and systems
- Emphasize soil and vegetation-based methods- green roofs, bioretention, etc.

Guidelines and Performance Benchmarks 2009

Site Design – Soils and Vegetation

Site Design—Soil and Vegetation 51 possible points

Protect and restore processes and systems associated with a site's soil and vegetation

Prerequisite 4.1: Control and manage known invasive plants found on site
Prerequisite 4.2: Use appropriate, non-invasive plants
Prerequisite 4.3: Create a soil management plan
Credit 4.4: Minimize soil disturbance in design and construction (6 points)
Credit 4.5: Preserve all vegetation designated as special status (5 points)
Credit 4.6: Preserve or restore appropriate plant biomass on site (3–8 points)
Credit 4.7: Use native plants (1–4 points)
Credit 4.8: Preserve plant communities native to the ecoregion (2–6 points)
Credit 4.9: Restore plant communities native to the ecoregion (1–5 points)
Credit 4.10: Use vegetation to minimize building heating requirements (2–4 points)
Credit 4.11: Use vegetation to minimize building cooling requirements (2–5 points)
Credit 4.12: Reduce urban heat island effects (3–5 points)
Credit 4.13: Reduce the risk of catastrophic wildfire (3 points)

Guidelines and Performance Benchmarks 2009

PREREQUISITE 4.3	Create a Soil Management Plan (SMP)

Technologies and Strategies:
Develop and communicate to construction contractors a SMP **prior to construction** to:

- limit disturbance
- assist soil restoration efforts
- define the location and boundaries of all Vegetation and Soil Protection Zones

Guidelines and Performance Benchmarks 2009

Site Design – Materials Selection

Site Design—Materials Selection 36 possible points

Reuse/recycle existing materials and support sustainable production practices

Prerequisite 5.1: Eliminate the use of wood from threatened tree species
Credit 5.2: Maintain on-site structures, hardscape, and landscape amenities (1–4 points)
Credit 5.3: Design for deconstruction and disassembly (1–3 points)
Credit 5.4: Reuse salvaged materials and plants (2–4 points)
Credit 5.5: Use recycled content materials (2–4 points)
Credit 5.6: Use certified wood (1–4 points)
Credit 5.7: Use regional materials (2–6 points)
Credit 5.8: Use adhesives, sealants, paints, and coatings with reduced VOC emissions (2 points)
Credit 5.9: Support sustainable practices in plant production (3 points)
Credit 5.10: Support sustainable practices in materials manufacturing (3–6 points)

Guidelines and Performance Benchmarks 2009

CREDIT 5.9	Support sustainable practices in plant production

Technologies and Strategies:

Nurseries that employ sustainable practices:

- Reduce Greenhouse Gas Emissions
- Employ Integrated Pest Management
- Prevent use and distribution of invasive species
- Reduce potable water consumption
- Use of sustainable soil amendments

Guidelines and Performance Benchmarks 2009

Site Design – Human Health & Well Being

Site Design—Human Health and Well-Being 32 possible points

Build strong communities and a sense of stewardship

Credit 6.1: Promote equitable site development (1–3 points)
Credit 6.2: Promote equitable site use (1–4 points)
Credit 6.3: Promote sustainability awareness and education (2–4 points)
Credit 6.4: Protect and maintain unique cultural and historical places (2–4 points)
Credit 6.5: Provide for optimum site accessibility, safety, and wayfinding (3 points)
Credit 6.6: Provide opportunities for outdoor physical activity (4–5 points)
Credit 6.7: Provide views of vegetation and quiet outdoor spaces for mental restoration (3–4 points)
Credit 6.8: Provide outdoor spaces for social interaction (3 points)
Credit 6.9: Reduce light pollution (2 points)

Guidelines and Performance Benchmarks 2009

CREDIT 6.1	Promote equitable site development

During construction of the site, ensure that the project provides economic or social benefits to the local community.

Technologies and Strategies:

- **Opportunities for job employment during construction** to local, low-income individuals.
- Commit to a **living wage requirement for 75 percent of workers** employed during construction of the site.
- Develop a **Community Benefits Agreement**

Guidelines and Performance Benchmarks 2009

CREDIT 6.3	Promote sustainable awareness and education

Technologies and Strategies:

- Provide educational or interpretive elements.
- Provide interactive elements or programming that expands sustainability learning and understanding
- Create partnerships to extend sustainability education to local community

Other credit categories: Construction, Operations & Maintenance, and Monitoring & Innovation

Construction 21 possible points

Minimize effects of construction-related activities

Prerequisite 7.1: Control and retain construction pollutants
Prerequisite 7.2: Restore soils disturbed during construction
Credit 7.3: Restore soils disturbed by previous development (2–8 points)
Credit 7.4: Divert construction and demolition materials from disposal (3–5 points)
Credit 7.5: Reuse or recycle vegetation, rocks, and soil generated during construction (3–5 points)
Credit 7.6: Minimize generation of greenhouse gas emissions and exposure to localized air pollutants during construction (1–3 points)

Operations and Maintenance 23 possible points

Maintain the site for long-term sustainability

Prerequisite 8.1: Plan for sustainable site maintenance
Prerequisite 8.2: Provide for storage and collection of recyclables
Credit 8.3: Recycle organic matter generated during site operations and maintenance (2–6 points)
Credit 8.4: Reduce outdoor energy consumption for all landscape and exterior operations (1–4 points)
Credit 8.5: Use renewable sources for landscape electricity needs (2–3 points)
Credit 8.6: Minimize exposure to environmental tobacco smoke (1–2 points)
Credit 8.7: Minimize generation of greenhouse gases and exposure to localized air pollutants during landscape maintenance activities (1–4 points)
Credit 8.8: Reduce emissions and promote the use of fuel-efficient vehicles (4 points)

Monitoring and Innovation 18 possible points

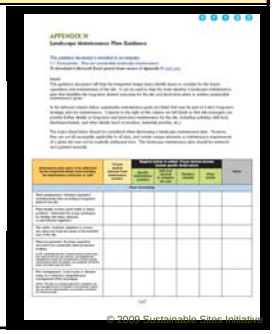
Reward exceptional performance and improve the body of knowledge on long-term sustainability

Credit 9.1: Monitor performance of sustainable design practices (10 points)
Credit 9.2: Innovation in site design (8 points)

Guidelines and Performance Benchmarks 2009

PRE-REQUISITE 8.1	Plan for sustainable site maintenance

- **Outlines the long-term strategies**
- **Identifies short-term actions** to achieve maintenance goals
- Requires developing and implementing a **Landscape Management Plan**



The Sustainable Sites Initiative and LEED

How has USGBC participated in SITES?	USGBC staff and volunteer involvement have helped shape the Initiative

- USGBC staff on the Steering Committee
- LEED Technical Advisory Group reviewing SITES Guidelines
  Likely will incorporate some into LEED 2012 (e.g. soils and integrated design process)
- USGBC staff support on pilot program creation and pilot projects review

U.S. GREEN BUILDING COUNCIL
USGBC

www.usgbc.org

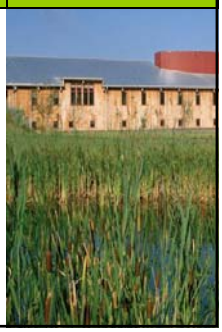
The Sustainable Sites Initiative and LEED

How is LEED reflected in the Initiative?

Integrated in many ways

Language from:

- Sustainable Sites credits
- Smart Location & Linkage credits
- Water Efficiency credits
- Green Infrastructure & Buildings credits
- Materials & Resources credits
- Indoor Environmental Quality credits
- Innovation in Design



The Sustainable Sites Initiative and LEED

How are LEED and SITES different?

Building & development-centric versus site-centric

LEED focuses:

- Building envelope & interior
- Smaller site components
- Location & community pattern

SITES focuses:

- Ecosystem protection, restoration, and regeneration
- Site & landscape-centric

The Sustainable Sites Initiative and LEED

SITES & GBCI
(Green Building Certification Institute)

USGBC has spun off GBCI to provide third party certification for green buildings

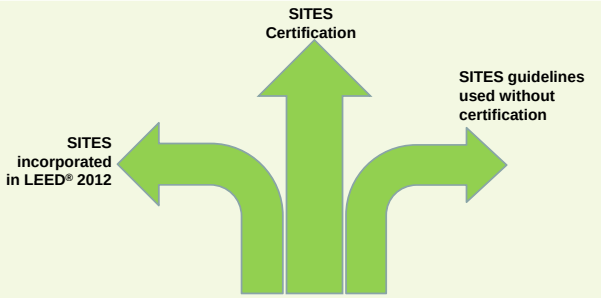
Relationship:

- LEED uses GBCI for project certification
- GBCI and USGBC staff advising on SITES pilot project review process and standards
- Possible agreement for SITES projects certification through GBCI in post-pilot open enrollment phase

GBCI®

Building Certification Professional Accreditation

SITES Options



Options for SITES tool

Goal: Widest Possible Use of SITES Guidelines & Performance Benchmarks

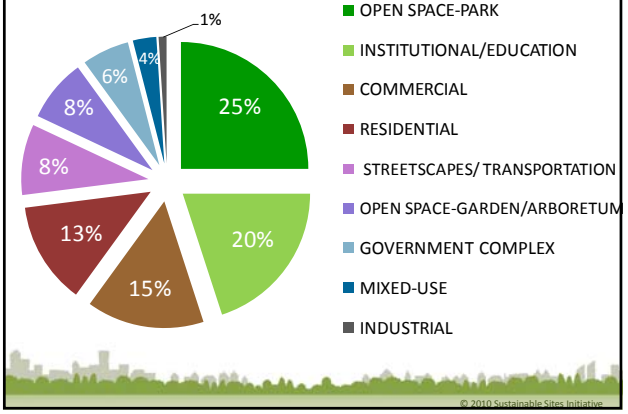
SITES Pilot Program 2010-2012

- **162 Registered Pilot Projects**
- **Range of project types and sizes, geographic diversity**
- **Certified Pilot Projects to inform Reference Guide**

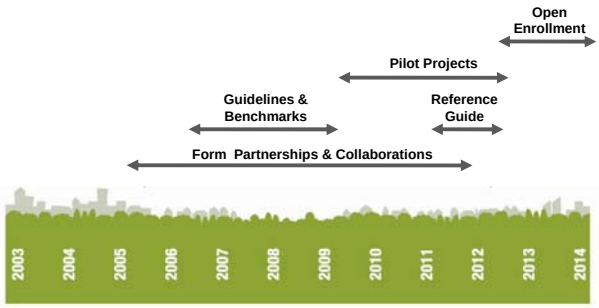
Registered SITES Pilot Projects

- **162 projects are participating in Pilot Program**
- **From 34 U.S. states as well as Canada, Iceland and Spain**
- **Information on pilot projects can be found at www.sustainablesites.org/pilot/**

SITES Pilot Project Types



Sustainable Sites Timeline



Comparing SITES to other rating systems

Built Green – builder self-certifies; focused on construction phase

Seattle Green Factor – Vegetation and stormwater focus; code-required, mostly design phase but includes maintenance plan

Living Building Challenge – building focused, all prerequisites (aspirational), minimal site guidance

Salmon Safe – stormwater/water quality/ habitat focus; design, construction, and maintenance/operations, also standards for agriculture

How can I learn more about Sustainable Sites?

The website! www.sustainablesites.org

- **Background**
- **Case studies**
- **Guidelines (rating system)**
- **Pilot projects**
- ***and more!***

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