



**MITIGATION
FUNDING:**
LEED®'S NEW
APPROACH TO
CONSERVATION

INTRODUCTION

The U.S. Green Building Council (USGBC) is working to protect wildlife habitat, ecosystems, and biodiversity. USGBC's mission statement—"to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life"—makes clear this commitment to environmental protection.

USGBC's LEED® green building program is the internationally recognized benchmark for the design, construction and operation of high performance green buildings. LEED encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

LEED strategies that indirectly support conservation and stewardship include smart growth, responsible sourcing of raw materials, reductions in emissions, and reduced use of both renewable and nonrenewable resources.

Direct land protection credits (see Appendix) require that a green building project avoid or protect sensitive habitat or restore degraded habitat. In the Sustainable Sites credit category, the credit known as Site Development—Protect or Restore Habitat gives project teams the option of transferring ownership of a tract of land to a recognized land trust as an offset to development. However, this option has been used by project teams only rarely; since 2009, less than 2% of all LEED projects eligible to pursue this credit have chosen it.

The Doris Duke Charitable Foundation¹ provided a grant to study the problems related to the Site Development credit and develop a better mechanism for protecting habitat through LEED. This report presents the results, describes a pilot approach designed to improve uptake, and provides guidance for LEED project teams seeking to earn credit for land stewardship.

¹ The Doris Duke Charitable Foundation (DDCF) is a top grant-making charity in the United States, having awarded more than \$1.1 billion in grants since its founding in 1997. DDCF supports arts, medical research, child abuse prevention, and environmental programs.



BENEFITS OF LAND CONSERVATION AND HABITAT PROTECTION

Protecting open space and wildlife habitat is of critical importance because the ability of our natural spaces to provide ecosystem services is declining. Although total forested area in the United States stabilized after 1900 and has in fact risen in recent years², habitat is more imperiled than ever. Habitat degradation is caused by certain forestry practices^{3,4}, invasive species, a changing climate, pollution, and especially fragmentation—the isolation of parcels of quality habitat.

Whereas in developing countries, deforestation and agricultural land conversion are among the biggest threats to habitat⁵, in the United States and most other developed countries, fragmentation⁶ due to development sprawl and changing landownership patterns has reduced populations of plant and animal species⁷. Fragmentation disrupts species' migratory patterns and limits their natural ranges, preventing their access to natural food sources⁸ and leading to a breakdown in the food web. Human-wildlife interactions⁹ and disease susceptibility increase¹⁰.

Preservation of intact or high-quality native habitat—including soils, native vegetation, land cover, wildlife corridors, and hydrology—is important for maintaining overall ecosystem health. The restoration of soils, hydrology, and vegetation can improve the viability of ecological communities, manage stormwater runoff, and regenerate other ecosystem functions.

Habitat and natural land areas provide intrinsic benefits to society and measurable benefits to individuals. Outdoor recreation, such as hunting, fishing, bird watching, boating, and hiking, connects people to the natural world and improves human health. The property value of land adjacent or close to natural areas is generally higher—studies

have shown that individuals will pay a premium to live in proximity to wilderness, for example¹¹—and generates economic benefits for towns and cities.

Open land is a finite natural resource, however. Even if buildings are razed, the effects of fragmentation and removal of natural features may be permanent: full restoration is not always possible. Therefore, USGBC seeks not only to minimize damage from the built environment but also to protect the natural world.

THE SITE DEVELOPMENT CREDIT

The goal of the Site Development—Protect or Restore Habitat credit is to protect open space. To achieve the credit, which is Sustainable Sites Credit 5.1 in the 2009 Building Design and Construction (BD+C) rating system and Sustainable Sites Credit 5 in the 2009 Existing Buildings Operations and Maintenance (EB:OM) rating system, project teams have had three options:

- on-site, protect habitat by limiting disturbance to a greenfield site;
- on-site, protect or restore a significant proportion of a previously developed project site; or
- off-site, donate to an approved land trust a parcel of land equal to 60% (including the building footprint) of the previously developed area of the project site.

This credit has had the lowest rate of certification in LEED: only 21% of BD+C project teams that attempted the credit have been successful, and the rate for EB:OM project teams is not much better, at 32%.

Moreover, Green Building Certification Institute reviewers have estimated that nearly all projects that applied for this credit did so using on-site protection. Less than 2% of all LEED projects were pursuing off-site habitat protection.

² "National Report on Sustainable Forests—2010" (U.S. Forest Service, FS-979, June 2011), www.fs.fed.us/research/sustain/docs/national-reports/2010/2010-sustainability-report.pdf.

³ "Diameter-limit cutting and silviculture in northern forests: A primer for landowners, practitioners and policymakers," by L. Keneferic and R. Nyland (U.S. Forest Service, NA-TP-02-05, August 2005), www2.dnr.cornell.edu/ext/forestconnect/web/diameter%20limit%20cutting%20primer%20NA-TP-02-05%20.pdf.

⁴ Diameter-limit cutting, also known as high grading, is the practice of selectively cutting only the highest-value trees. The removal of the best individuals from the gene pool leads to unhealthy forests.

⁵ *Global Forest Resources Assessment 2010: Main Report* (Rome: Food and Agriculture Organization of the United Nations, FAO Forestry Paper 163), www.fao.org/docrep/013/i1757e/i1757e.pdf.

⁶ Ibid.

⁷ "What is forest fragmentation and why is it important?" (Ithaca, N.Y.: Cornell Lab of Ornithology), www.birds.cornell.edu/bfl/gen_instructions/fragmentation.html.

⁸ "Population fragmentation of grizzly bears in southeastern British Columbia, Canada," by M.F. Proctor et al. (*Ursus* 8: 153–160, 2002).

⁹ "Animal behavior in urban ecosystems: Modification due to human-induced stress," by S. Ditchkoff et al. (*Urban Ecosystems* 9: 5–12, 2006).

¹⁰ "Wildlife disease prevalence in human-modified landscapes," by G. Brearly et al. (*Biological Reviews Cambridge Philosophical Society*, 2011), www.ncbi.nlm.nih.gov/pubmed/23279314.

¹¹ "Windfalls for wilderness: Land protection and land values in the Green Mountains," by S. Phillips (doctoral dissertation, Virginia Polytechnic Institute and State University, February 2004), scholar.lib.vt.edu/theses/available/etd-02042004-141616/unrestricted/Phillips-Spencer_VPISU-AAEC_PHD-Dissertation_2004-02-10.pdf.

Feedback from project teams indicated that the off-site option was burdensome and costly. To donate land to a land trust, a project team incurs costs related to transferring landownership and, often, legal representation. A developer who does not already own suitable land must complete two transactions—one to purchase land, and another to donate the land to a land trust.

Recognizing that this credit needed improvement, USGBC invited representatives from The Nature Conservancy, the Trust for Public Lands, the Land Trust Alliance, and the Conservation Fund, as well as the Doris Duke Charitable Foundation, to a meeting at the organization's Washington, D.C., headquarters on January 8, 2013.

MITIGATION FUNDING: A DIFFERENT MECHANISM

To promote more effective stewardship while making the credit more attractive to project teams and more efficient for conservation partners, USGBC chose to replace donation of land with a monetized program involving mitigation payments to offset the costs of development to the environment. A pilot alternative compliance path was proposed as a way to test the new approach to off-site land conservation.

The pilot credit, known as SSpc83, allows project teams to earn a point toward certification by making mitigation payments. For BD+C projects, the minimum amount is a one-time payment of \$0.40 per square foot of the project site area (including building footprint), and for EB:OM projects, the minimum is an annual payment of \$0.05 per square foot of the project site area (including building footprint). These values are commensurate with the cost of achieving other LEED credits, rather than based on the value of ecosystem services lost through land use. For EB:OM projects, the rate is low because overall costs to retrofit a building are less than the costs for new construction, and the payment is annual, reflecting the ongoing performance requirement for certification of existing buildings.

The National Fish and Wildlife Foundation (NFWF) will collect, administer, and distribute the mitigation funds. NFWF, a congressionally chartered 501(c)3 nonprofit, receives more than \$40 million per year from the U.S. government and has the resources and expertise to ensure that funds raised through this credit are spent

The off-site option was found burdensome to the land trusts as well. Direct land contributions made through the credit often consisted of small tracts with limited ecosystem value, sometimes located far from other properties managed by the recipient land trust. These parcels had to be maintained by the land trust, consuming resources that could otherwise be used on more critical open space. The trusts often sold these tracts to support conservation efforts on more significant projects, but the transactions increased overhead and took money away from other efforts. Thus, the donations of fragmented parcels encouraged by the off-site option were not meeting the intent of the credit.

responsibly and effectively. Recently, for example, NFWF was chosen to administer more than \$1 billion in settlement funds to restore areas of the Gulf coast damaged by the *Deep Water Horizon* oil spill.

All funds generated through SSpc83 will go to NFWF and be earmarked for the LEED land-use mitigation fund. NFWF will leverage this mitigation fund through matching donations, federal funding, and endowment interest to enhance the value of the initial payments. As a result, a LEED project team can expect that its payment will be matched at least 2:1 before being applied to a conservation cause.

SSpc83 was added to the LEED Pilot Credit Library in September 2013.

Along with the launch, there were several articles published providing additional information about the credit and its goals.

“Closing out pilot credits”

Washington, D.C.: USGBC, September 16, 2013

This announcement included the launch of SSpc83.

“Protecting America the Beautiful: How LEED helps save nature and habitat,” by Jason Hartke and Sam Glass

Washington, D.C.: USGBC, October 4, 2013

This paper discusses the conservation ethos and the intent of habitat protection in LEED.

“The case for habitat protection—benefits to the economy and human health,” by Sam Glass

Washington, D.C.: USGBC, October 24, 2013

This discussion focuses on how conservation benefits human health and improves property values.

“NFWF & USGBC: Working together to protect the great outdoors,” by David O’Neill

Washington, D.C.: USGBC, October 31, 2013

David O’Neill, vice president of NFWF’s conservation program, describes the foundation’s conservation work and achievements.

“Habitat Connect and Learn at Greenbuild,” by Sam Glass

Washington, D.C.: USGBC, November 13, 2013

This news item announced the Connect and Learn event at USGBC’s annual Greenbuild International Conference & Expo, held in 2013 in Philadelphia, Penn.

HOW SSpc83 WORKS

The Site Development credit’s alternative compliance path is intended to be easy for project teams to achieve while maintaining demonstrable benefit to the environment. A project team that decides to pursue the credit (**SS Credit 5.1 for BD+C projects**, **SS Credit 5 for EB:OM projects**) takes the following steps:

1. Indicate in the provided field on the credit submission form that the team is pursuing the alternative compliance path.
2. Calculate the total amount of financial support required, based on project site area and project type.
3. Go to the NFWF website (www.nfwf.org/Pages/Donate.aspx), make payment, and receive an email receipt from NFWF.
4. For documentation, submit the receipt, along with documentation of the project site area.

APPLICABILITY

The pilot alternative compliance path is currently available only to projects pursuing certification under the rating systems of LEED v2009; it not applicable to LEED v2.2 (2005), and it has not yet been applied to v4 (2013). SSpc83 is not part of the Neighborhood Development rating system.

Because NFWF operates primarily in the United States, SSpc83 is currently recommended only for U.S. projects. Project teams outside the United States are not prohibited from pursuing off-site habitat conservation through mitigation funding but should be aware that the funds will be spent in the United States.

Project teams outside the United States seeking to protect habitat off-site can also achieve compliance by following the original off-site option and giving land equal to 60% of the previously developed area to a land trust or conservation group within 100 miles of the project location.

As USGBC expands this mitigation funding program, international applicability is a high priority for 2014. Announcements will be made on usgbc.org. Project teams may also contact USGBC directly to inquire about applicability abroad.

MITIGATION FUNDING GOALS

USGBC anticipates that the pilot alternative compliance path will eventually generate \$5 million to \$10 million in conservation funding per year. Furthermore, the amounts should grow because of the “stacking” component of the EB:OM provisions: projects are required to support conservation efforts on a yearly basis.



At current levels of participation (2%), the off-site option would generate less than \$3 million per year. The goal is to triple this level of participation. Table 1 shows expected levels of funding at different rates of participation.

Table 1. Expected Mitigation Funding By Participation Rate

PARTICIPATION	BD+C	EB:OM	TOTAL
1%	\$1,100,284	\$23,366	\$1,123,649
3%	\$3,300,851	\$70,097	\$3,370,948
5%	\$5,501,418	\$116,828	\$5,618,246
10%	\$11,002,837	\$233,656	\$11,236,493
15%	\$16,504,255	\$350,484	\$16,854,739

NEXT STEPS

In 2014, USGBC plans to expand the mitigation funding program to the latest version of the LEED rating systems, as well as provide international applicability. USGBC also plans to add a similar alternative compliance path to the v4 version of the Site Development—Protect or Restore Habitat credit. The v4 credit language already incorporates a monetized option: project teams can make payments (at the same levels as in SSpc83) to eligible land trusts. As with the alternative compliance path for v2009, the proposed recipient and administrator of the mitigation funding would be NFWF.

Although NFWF's use of the funds is unrestricted for the first year of the program, USGBC and NFWF will transition to a branded, directed land-use mitigation program. This will allow USGBC subject matter experts to guide the use of the funds generated by LEED projects.

If SSpc83 meets the funding goals, NFWF will be able to create special programs in USGBC's name. Wal-Mart's Acres for America program is one model for a joint USGBC-NFWF program: Wal-Mart gives financial support to NFWF to offset land used by Wal-Mart for stores and other facilities and thereby protects one acre of open space for each acre used by the chain retailer. To date, this program has permanently protected 830,000 acres.

USGBC will consult with NFWF on the best use of the SSpc83 funds and will encourage open space protection, particularly to address issues of fragmentation, which is directly tied to sprawl and thus a consequence of the built environment. In this way, funds raised through SSpc83 will address problems caused by the building industry. USGBC will also seek input from chapters to identify specific regional conservation needs. The program will sponsor projects in different regions to address needs across the country, thereby addressing local concerns while still benefiting from the leveraged funding made possible by the centralized collection of payments.

NFWF will provide semiannual reports detailing how funds were spent and what outcomes were achieved. These reports will be published on the Green Building Integration Gateway landing page for SSpc83, as well as in the resources section of the USGBC.org website.

In addition to ensuring that funds are used to address needs identified by USGBC's national office and regional chapters, the program will be branded, both to develop good will and to promote high-profile conservation projects that also provide marketing benefits.

Because of the long time required for designing and constructing or retrofitting a building and for completing the LEED application process, a delay between the launch and significant levels of uptake is expected. As of the end of November 2013, one LEED project, a retailer, has elected to pursue SSpc83.

USGBC will present case studies on projects that have pursued the Site Development—Protect or Restore Habitat credit using the alternative compliance path. These case studies will be posted on the SSpc83 landing page of the Green Building Integration Gateway, alongside documentation of conservation achievements by NFWF.

FOR MORE INFORMATION

Review the credit language:
usgbc.org/credits/sspc83
and usgbc.org/credits/sspc83ebom

Visit LEEDuser.com

Contact us: pilot@usgbc.org

APPENDIX

ADDITIONAL LAND PROTECTION STRATEGIES IN LEED

In addition to the Site Development credit, several other LEED v2009 credits directly address the protection of open space or habitat. Table A1 summarizes these credits for BD+C: New Construction, but most also appear in other rating systems (e.g., EB:OM, Hospitals, and Schools). Specific credit language can be found at usgbc.org.

Table A1. New Construction conservation credits in LEED v2009

CREDIT	INTENT	SUMMARY OF REQUIREMENTS
Site Development— Maximize Open Space	To promote biodiversity by providing a high ratio of open space to development footprint.	Option 1. Exceed vegetated space requirements of zoning law by 25%. Option 2. Provide vegetation onsite equal to the area of building footprint. Option 3. Provide vegetated space equal to 20% of the footprint.
Heat Island Effect—Roof	To reduce heat islands to minimize impacts on microclimates and human and wildlife habitats.	Option 1. Use roofing material that meets solar reflectance requirements. Option 2. Install vegetated roof covering for at least 50% of roof area. Option 3. Provide high-albedo or vegetated surfaces that meet specified criteria.
Light Pollution Reduction	To minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction and reduce development impact from lighting on nocturnal environments.	INTERIOR LIGHTING Option 1. Reduce input power of all nonemergency lighting near building openings by 50% between 11 P.M. and 5 A.M. Option 2. Provide shielding, such as doors or shades, over all building openings. EXTERIOR LIGHTING Meet specified requirements for light trespass.
Bird Collision Deterrence Pilot Credit	To reduce bird injury and mortality from in-flight collisions with buildings.	Employ specified strategies for building façade, interior lights, exterior lighting, and postconstruction monitoring.

The Neighborhood Development rating system accredits neighborhoods rather than individual buildings. Table A2 summarizes the Neighborhood Development credits that directly address land conservation and habitat protection.

Table A2. Neighborhood Development conservation credits in LEED v2009

CREDIT	INTENT	SUMMARY OF REQUIREMENTS
Imperiled Species and Ecological Communities Conservation	To conserve imperiled species and ecological communities.	Survey site to identify any threatened or endangered species. Develop plan, including buffer zones, to protect threatened or endangered species.
Wetland and Water Body Conservation	To preserve water quality, natural hydrology, habitat, and biodiversity through conservation of wetlands and water bodies.	Avoid building on or close to wetlands and open water bodies.
Agricultural Land Conservation	To preserve irreplaceable agricultural resources by protecting prime and unique soils on farmland and forestland from development.	Avoid building on farmland.
Preferred Locations	To encourage development within existing cities, suburbs, and towns to reduce adverse environmental and public health effects associated with sprawl. To reduce development pressure beyond limits of existing development. To conserve natural and financial resources required for construction and maintenance of infrastructure.	Choose infill site.
Site Design for Habitat or Wetland and Water Body Conservation	To conserve native plants, wildlife habitat, wetlands, and water bodies.	Avoid disrupting significant habitat, or permanently protect habitat that is on-site.
Restoration of Habitat and Water Bodies	To restore native plants, wildlife habitat, wetlands, and water bodies that have been harmed by previous human activities.	Use native plants to restore predevelopment ecological communities in area equal to 10% of development footprint. Permanently protect this area through conservation easements or similar measures.
Long-Term Conservation Management of Habitat or Wetland and Water Bodies	To conserve native plants, wildlife habitat, wetlands, and water bodies.	Develop and commit to implementing 10-year management plan for new and existing on-site habitat space.
Access to Civic and Public Space	To improve physical and mental health and social capital by providing variety of open spaces close to work and home to facilitate social networking, civic engagement, physical activity, and time spent outdoors.	Locate project within close walking distance of park, square, or plaza of at least 1/6th acre.

