

U.S. GREEN BUILDING COUNCIL'S (USGBC) LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED) PROGRAM is a point system designed to be applied to every building type and phase of a building life cycle. It recognizes responsible use of materials, land, energy, ergonomics, and design considerations. To become a LEED certified project, a building must score at least 26 points. The Silver, Gold, and Platinum certification levels require 33, 39, and 52+ points, respectively, to an ideal 69 points.

Category	Available Points
Sustainable Sites (SS)	14 (20%)
Water Efficiency (WE)	5 (7%)
Energy and Atmosphere (EA)	17 (25%)
Materials and Resources (MR)	13 (19%)
Indoor Environmental Quality (EQ)	15 (22%)
Innovation and Design Process (ID)	5 (7%)
Total Points Available	69

Benefits associated with sustainable development practices include:

- Lower life cycle costs, because design is not constricted to first cost, yielding increased profitability to owners.
- Enhanced habitability, occupancy and productivity because of ergonomic design.
- Increased worker productivity and satisfaction.
- Possible energy tax rebates. (Tax rebates are not available in all states. For more information, visit <http://dsireusa.org>.)

Fly Ash in LEED

Fly ash, in combination with other qualifying building materials, can contribute to points in 5 categories. (The only way fly ash itself earns a point is through "Innovation", when using high volume fly ash concrete mixes, which contribute to greenhouse gas mitigation.)

(MR) Credit 4.1: Recycled Content: 10% (post-consumer plus ½ pre-consumer) – 1 point. This credit is awarded if the sum of the post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project. Supplementary cementitious materials, including fly ash, ground granulated blast furnace slag, and silica fume, qualify as "pre-consumer material", based on the ISO 14021 definition.

In this category, for example, reinforcing steel could satisfy the postconsumer content, and the fly ash in a high volume fly ash (HVFA) concrete mix could contribute to the pre-consumer content. In LEED 2.2, recycled content of concrete can now be based on the recycled content of cementitious materials alone,

rather than on the recycled content of the concrete mix as a whole.

(MR) Credit 4.2 adds another point when the qualifying recycled content reaches a minimum of 20% (based on cost) of the total value of the materials in the project.

(MR) Credit 5.1: Regional Materials: 10% Extracted, Processed, & Manufactured Regionally – 1 point. This credit is for use of building materials or products that have been extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (based on cost) of the total materials value. "Manufactured" refers to the final assembly of components into the building product, furnished to and installed by tradesmen; the source of the raw materials making up the manufactured product is immaterial. Most cities have sources of fly ash, cement, and aggregate within 500 miles, so fly ash in particular, as a recovered byproduct, and concrete in general, should qualify for this point.

(MR) Credit 5.2 adds another point when the qualifying building materials or products reach a total of 20% (based on cost) of the total materials value. If only a fraction of the material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

(ID) Credit I-1.4: Innovation in Design – 1 to 4 points. These credits are designed to reward exceptional performance above the requirements of the rating system and/or innovative performance in categories not specifically addressed in the rating system. Concrete mixtures utilizing high volumes of fly ash as a percentage by weight of total cementitious materials may be awarded a point because using fly ash to replace portland cement reduces cement production, which in turn reduces the CO₂ emissions associated with the production of portland cement.

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Building with concrete that contains fly ash can contribute significantly to earning points in the USGBC's LEED program. Recently updated LEED-NC Version 2.2 is designed to simplify the certification process and make the program more attractive for general use.

Concrete in LEED

Concrete can earn up to 25 points (36% of the ideal point total) in the LEED program, depending upon circumstances, conditions, and design. Green building is a collaborative effort. The key to maximizing points is for the project team – Owner, Architect, Engineer, Contractor and Concrete Supplier – to work together as early in the construction process as possible, so that the team members can provide input on the best ways to achieve sustainability goals.

To learn more about green building practices and LEED, visit www.usgbc.org or www.leadbuilding.org.



For more information or answers to questions about the use of fly ash in specific applications, contact your nearest Headwaters Resources Technical Sales Representative or call 1-888-236-6236.

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