



EnLink g e o e n e r g y

The Department of Energy (DOE) has recognized geothermal heat pump systems as the most energy efficient and environmentally friendly HVAC system on the market. **Simply installing geothermal heat pump (GHPs) systems can earn a building up to 19 points from the Energy and Atmosphere LEED Credit 1** and additional points for other categorical credits.

about LEED®

LEED Rating Systems

The U.S. Green Building Council established the LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ to recognize sustainable building and developmental practices. Projects can fall under one of nine LEED rating systems. Points are awarded for nine credit categories after construction prerequisites have been met.

Maximum Points: 100
Bonus Points: 10
Total Possible Points: 110

LEED Certification: 40-49 points
LEED Silver: 50-59 points
LEED Gold: 60-79 points
LEED Platinum: 80-110 points

LEED® Rating Systems:

- (1) New Construction: New Construction and Major Renovations.
- (2) Existing Building - Operations and Maintenance: Measuring operations, maintenance, and improvements.
- (3) Commercial Interiors: Sustainable choices to tenants and designers.
- (4) Core and Shell: Aides design for new core and shell construction.
- (5) Schools: Addresses design and construction needs of school facilities.
- (6) Retail: Addresses design and construction needs of retail facilities.
- (7) Healthcare: Addresses design and construction needs of healthcare facilities.
- (8) Homes: High performance homes.
- (9) Neighborhood Development: Neighborhood Design

LEED® Credit Categories:

- (1) Sustainable Sites: Reduces construction impact on the environment.
- (2) Water Efficiency: Promotes water conservation.
- (3) Energy and Atmosphere: Promotes energy – efficiency and the use of renewable energy sources.
- (4) Materials and Resources: Promotes reuse and recycling, while eliminating excess waste.
- (5) Indoor Environmental Quality: Promotes improved air, lighting, and acoustic quality.
- (6) Locations and Linkages: (Home Rating System) Promotes home building near already established infrastructure.
- (7) Awareness and Education: Encourages educating residents on green technology
- (8) Innovation in Design: Promotes the use of innovative design and technologies to surpass LEED requirements.
- (9) Regional Priority: The USGBC has locally identified environmental concerns throughout the country. Regional Priority promotes resolving those concerns.

LEED® is a registered trademark of the United States Green Building Council. For more information, visit usgbc.org.

GHPs greatly assist in accumulating LEED points by:

- 🌍 Reaching efficiencies up to 600%
- 🌍 Reducing energy use by up to 70%
- 🌍 Conserving water by eliminating the need for cooling tower
- 🌍 Eliminating all HVAC related on-site combustion products and greenhouse gas emissions
- 🌍 Increasing the indoor environmental quality
- 🌍 Reducing noise pollution
- 🌍 Decreasing use of ozone depleting hydrochloroflourocarbons

Scenario for a Vertical Loop GHPs based on New Construction Rating System:

Energy and Atmosphere

Prerequisites specifications: complied
Optimize Energy Performance – 1 to 19 point
Enhanced Refrigerant Management – 2 point
Measurement and Verification – 3 point
Green Power – 2 point

Indoor Environmental Quality

Prerequisites specifications: complied
Controllability of Systems - Thermal Comfort – 1 point
Thermal Comfort Design – 1 point
Thermal Comfort Verification – 1 point

Innovation and Design Process

Innovation in Design Credits 1.1 to 1.5 – 1 to 5 points

Total points GHPs could contribute towards a building's LEED score:

34 (Maximum) **12** (Minimum)

The above scenario is only a possibility; there are many factors which could affect the total points earned for solely using GHPs. As well, LEED was designed to take a whole building approach to sustainability. Calculations are based on data and guidelines established by USGBC for LEED certifications. There are many qualifying factors which influence total credit points, including full system design, utilization, building use, project design, equipment used, location, occupancy rates, floor area requirements, building area to site area ratios, proximity to neighborhoods and services, access points, minimum energy performance, and ventilation systems used. Minimum requirements must also be met in order to satisfy prerequisites within the credit categories.

(1) Sustainable Sites

Possible Points: 26

Prerequisite:

Construction Activity Pollution Prevention

- Credit 1 – Site Selection: 1 point
- Credit 2 – Development Density and Community Connectivity: 5 point
- Credit 3 – Brownfield Redevelopment: 1 point
- Credit 4.1 – Alternate Transportation_Public Transportation Access: 6 point
- Credit 4.2 – Alternate Transportation_Bicycle Storage and Changing Rooms: 1 point
- Credit 4.3 – Alternate Transportation_Low-Emitting and Fuel-Efficient Vehicles: 3 point
- Credit 4.4 – Alternate Transportation_Parking Capacity: 2 point
- Credit 5.1 – Site Development_Protect and Restore Habitat: 1 point
- Credit 5.2 – Site Development_Maximizing Open Space: 1 point
- Credit 6.1 – Storm Water Design_Quantity Control: 1 point
- Credit 6.2 – Storm Water Design_Quality Control: 1 point
- Credit 7.1 – Heat Island Effect_Non-Roof: 1 point
- Credit 7.2 – Heat Island Effect_Roof: 1 point
- Credit 8 – Light Pollution Reduction: 1 point

(2) Water Efficiency

Possible Points: 10

Prerequisite: Water Use Reduction – 20%

- Credit 1 – Water Efficient Landscaping: 2 to 4 point
- Credit 2 – Innovative Wastewater Technologies: 2 point
- Credit 3 – Water Use Reduction: 2 to 4 point
 - 30% reduction: 2 point
 - 40% reduction: 3 point
 - 50% reduction: 4 point

(3) Energy and Atmosphere

Possible Points: 35

Prerequisites:

Fundamental Commissioning of Building Energy Systems

Minimum Energy Performance

Fundamental Refrigerant Management

- Credit 1 – Optimize Energy Performance: 1 to 19 point
 - 12% for New Building - 8% for Existing Building: 1 point
 - 14% for New Building - 10% for Existing Building: 2 point
 - 16% for New Building - 12% for Existing Building: 3 point
 - 18% for New Building - 14% for Existing Building: 4 point
 - 20% for New Building - 16% for Existing Building: 5 point
 - 22% for New Building - 18% for Existing Building: 6 point
 - 24% for New Building - 20% for Existing Building: 7 point
 - 26% for New Building - 22% for Existing Building: 8 point
 - 28% for New Building - 24% for Existing Building: 9 point
 - 30% for New Building - 26% for Existing Building: 10 point
 - 32% for New Building - 28% for Existing Building: 11 point
 - 34% for New Building - 30% for Existing Building: 12 point
 - 36% for New Building - 32% for Existing Building: 13 point
 - 38% for New Building - 34% for Existing Building: 14 point
 - 40% for New Building - 36% for Existing Building: 15 point
 - 42% for New Building - 38% for Existing Building: 16 point
 - 44% for New Building - 40% for Existing Building: 17 point
 - 46% for New Building - 42% for Existing Building: 18 point
 - 48% for New Building - 44% for Existing Building: 19 point
- Credit 2 – On-Site Renewable Energy: 1 to 7 point
- Credit 3 – Enhanced Commissioning: 2 point
- Credit 4 – Enhanced Refrigerant Management: 2 point
- Credit 5 – Measurement and Verification: 3 point
- Credit 6 – Green Power: 2 point

(4) Materials and Resources

Possible Points: 14

Prerequisite:

Storage and Collection of Recyclables

- Credit 1.1 – Building Reuse_Maintain Existing Walls, Floors, and Roof: 1 to 3 point
- Credit 1.2 – Building Reuse_Maintain 50% of Interior Non-Structural Elements: 1 point
- Credit 2 – Construction Waste Management: 1 to 2 point
- Credit 3 – Materials Reuse: 1 to 2 point
- Credit 4 – Recycled Content: 1 to 2 point
- Credit 5 – Regional Materials: 1 to 2 point
- Credit 6 – Rapidly Renewable Material: 1 point
- Credit 7 – Certified Wood: 1 point

(5) Indoor Environmental Quality

Possible Points: 15

Prerequisites:

Minimum Indoor Quality Performance

Environment Tobacco Smoke (ETS) Control

- Credit 1 – Outdoor Air Delivery Monitoring: 1 point
- Credit 2 – Increased Ventilation: 1 point
- Credit 3.1 – Construction IAQ Management Plan_During Construction: 1 point
- Credit 3.2 – Construction IAQ Management Plan_Before Occupancy: 1 point
- Credit 4.1 – Low Emitting Materials_Adhesives and Sealants: 1 point
- Credit 4.2 – Low Emitting Materials_Paints and Coatings: 1 point
- Credit 4.3 – Low Emitting Materials_Flooring Systems: 1 point
- Credit 4.4 – Low Emitting Materials_Composite Wood and Agrifiber Products: 1 point
- Credit 5 – Indoor Chemical and Pollutant Source Control: 1 point
- Credit 6.1 – Controllability of Systems_Lighting: 1 point
- Credit 6.2 – Controllability of Systems_Thermal Control: 1 point
- Credit 7.1 – Thermal Comfort_Design: 1 point
- Credit 7.2 – Thermal Comfort_Verification: 1 point
- Credit 8.1 – Daylight and Views_Daylight: 1 point
- Credit 8.2 – Daylight and Views_Views: 1 point

(6) Innovation and Design Process

Possible Points: 6 (Bonus)

- Credit 1.1 – Innovation in Design – Specific Credit: 1 point
- Credit 1.2 – Innovation in Design – Specific Credit: 1 point
- Credit 1.3 – Innovation in Design – Specific Credit: 1 point
- Credit 1.4 – Innovation in Design – Specific Credit: 1 point
- Credit 1.5 – Innovation in Design – Specific Credit: 1 point
- Credit 2 – LEED Accredited Professional: 1 point

(7) Regional Priority Credits

Possible Points: 4 (Bonus)