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Mead Wildlife Area Education & Visitor Center

Summary of LEED Certification Facts & Features

EAc1	Projected total energy use 86% better than model energy code
EAc2	Projected renewable energy usage greater than 20% of total energy usage
EAc6	100% of utility energy from renewable energy sources
EQc4	Low or zero-VOC paints, materials and finishes, non-urea formaldehyde glues
EQc8	100% of occupied space has access to natural lighting and views to the outside
WEc1	Natural non-irrigated native landscaping and vegetation
WEc3	Projected water usage 35% below EPA baseline
MRC2	97% of construction waste and 99.7% of all waste recycled or re-purposed
MRC4	11% recycled-content of building materials
MRC5	88% of building products and 67% of material ingredients from within 500 miles

Sustainable Sites	9 out of 14 possible points
Water Efficiency	4 out of 5 possible points
Energy & Atmosphere	16 out of 17 possible points
Materials & Resources	6 out of 13 possible points
Environmental Quality	14 out of 15 possible points
Innovation & Design *	5 out of 5 possible points

* Innovation & Design	Public Education Program
	Exemplary Renewable Energy Use
	Exemplary Construction Waste Management Program
	Exemplary Green Power Use

Mead LEED Certification	54 out of 69 possible points	Platinum Level
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LEED Certification Levels	Certified 26-32 points
	Silver 33-38 points
	Gold 39-51 points
	Platinum 52-69 points

Originally envisioned as a 3700 square foot office building, the total budget approved by the State Building Commission was \$722,000, of which \$547,900 was for construction. Total State funds committed were \$606,600, with \$115,500 to be provided through private fundraising by the Friends of The Mead McMillan Association, Inc., a non-profit organization. The completed building is 6,208 square foot with expanded classroom, kitchen, and interpretive display areas. The construction cost was \$1.7 Million, which included construction, site work, equipment, fees, etc., and \$120,000 for renewable energy systems. An additional \$1 Million was raised to support an endowment for a full-time naturalist and educator at the facility.

Sustainable Design & Construction Features

A number of elements were evaluated and incorporated into this project:

High-Performance Building Envelope:

- Heavily-insulated concrete foundation & slab floor, with hydronic-radiant heat distribution, supplied by renewable energy systems.
- Interior strapped-wall construction method, consisting of 2x6 structural stud walls with an added layer of horizontal 2x2 and 2x4 strapping across the inside face of the studs to provide a thermal break, reduce the ratio of solid framing to cavity insulation and provide a 7" insulated cavity.
- Airtight/super-insulated construction with wood-frame construction details modified for air-sealing.
- Recycled-content wall-spray cellulose insulation in wall cavities.
- Raised-heel cantilevered wood-frame truss system to allow for increased levels of attic insulation.
- Extended roof overhangs sized for winter sun penetration and summer sun shading.
- Recycled-content blown cellulose attic insulation.
- Taped and sealed interior vapor-barrier.
- Use of airtight electrical box enclosures to ensure integrity of wall vapor-barrier.

Daylighting & Advanced Lighting Controls:

- Ceiling heights tied to height & location of clerestory windows.
- Exterior overhangs to reduce glare, overheating and to reduce cooling loads.
- Interior transom windows to allow for borrowed light from adjacent spaces.
- Interior ceiling finishes and configurations to allow for bounced-light penetration into the interior.
- Interior wall finishes to allow for reflected light penetration and to reduce contrast.
- Suspended direct/indirect pendant lighting and cove lighting to provide diffuse ambient lighting.
- Supplemental task lighting at workstations and task areas.
- Occupancy sensor-operated controls for lighting in specific occupancy spaces.
- Low-wattage fluorescent and compact-fluorescent lighting fixtures.
- LED low-wattage exit signs and other fixtures.

High-Performance Mechanical Systems:

- Geothermal, ground-source, closed-loop, water-to-water heat pumps.
- Non-CFC equipment to avoid atmospheric ozone depletion.
- Individually-zoned controls for heating, cooling, humidity and ventilation.
- Zone-controlled Energy-Recovery Ventilation equipment for mechanical ventilation & make-up air.
- Zone-controlled in-floor hydronic-radiant heat distribution.
- Carbon Dioxide monitoring.

Sustainable Building Strategies & Materials for LEED certification:

- Reduced site disturbance at building, site access roads, parking & utilities to reduce erosion.
- Reduced impervious surfaces, parking areas, etc. and retention ponds to reduce runoff.
- Cut-off exterior lighting fixtures to eliminate glare and light pollution.
- Non-irrigated drought-resistant plantings and restored prairie plantings to reduce water needs.
- Reduced energy load and renewable energy sources for heating & cooling.
- On-site construction waste management.
- Panelized construction to reduce construction waste.
- Construction practices to minimize contamination and degradation of materials and systems.
- Use of low or non-VOC finishes, sealants, adhesives, etc.
- Use of non-urea formaldehyde containing products and components.
- Operable windows for light, views and ventilation.
- Water-efficient plumbing fixtures for water conservation.
- Recycled-content building materials and finishes, such as ceiling panels, wallboard, etc.
- Fundamental Building Commissioning for optimal system performance.

Design Team expertise to ensure coordinated incorporation of sustainable building strategies:

- LEED-accredited Architect with expertise in designing energy-conserving and environmentally-responsible projects to review building design for optimal utilization of cool daylighting and advanced lighting control techniques.
- LEED-accredited Professional Engineer to review building and mechanical system design for optimal system performance and to undertake Fundamental Building Commissioning.
- LEED-accredited Landscape Architect for sustainable site development.
- Renewable Energy system consultants for incorporation of selected renewable energy.
- LEED-experienced Construction Manager for site improvements & Renewable Energy systems.

Public demonstration program:

- Highly-visible public facility.
- Showcase of exemplary building practices and the use of renewable energy systems.
- Orientation, explanation and interpretation of high-performance building features and renewable energy systems to building occupants, visitors and general public.
- Permanent fixed and moveable display panels to illustrate building construction features and renewable energy system features.
- Mounting of renewable energy system controls and panels in a publicly-accessible location.
- Energy modeling of building design and documentation of actual energy usage.
- Preparation of brochures and educational materials about building features for visitors.
- Volunteer interpretive programs for school field trips, community groups and visitors.
- Availability for inclusion on solar and energy-efficient building tours hosted by Midwest Renewable Energy Association and others.

Renewable Energy Systems & Demonstration Components

Renewable technologies evaluated for their feasibility and incorporated into the project include:

Photovoltaic Electricity:

- 2.3 KW free-standing pole-mounted Dual-axis Tracking Array.
- 18 Kyocera KC125 125 watt panels.
- Estimated annual energy output: 3,700 to 4,100 KWH/yr.

Wind Electricity:

- 10 KW Bergey XL wind turbine on 120' free-standing Tower.
- Estimated annual energy output: 8,400 to 10,800 KWH/yr.

Geothermal Energy:

- Eight closed-loop Ground-Source Heat Pumps for heating & cooling.
- Four (4) water-to-water units for multi-zone in-slab hydronic-radiant floor heating system.
- 16 ton heating/cooling capacity rating.
- Four (4) water-to-air units for multi-zone ventilation & conditioned-air system.
- 13 ton heating/cooling capacity rating.
- Thirty-two (32) 600' long exterior heat-exchange ground loops, buried 8' feet deep.

Solar Thermal Energy (water):

- Three-panel ground-mounted Solar Hot Water Collector Array for domestic hot water.

Biomass Energy (wood):

- Central Masonry Heater for high-efficiency wood-fired radiant space heating.
- Hydronic Heat Exchanger for connection to radiant floor heating distribution system.

The renewable energy contribution from Wind and Solar Photovoltaic electricity is approximately 25% of the building's total energy usage, with some months averaging closer to 40% of total energy use. Additional utility energy purchased is from 100% renewable sources through Alliant Energy's Second Nature program.

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The Mead facility is the first and only State or publicly-owned building to achieve LEED Platinum certification in Wisconsin. It is also the first building built to the LEED Platinum standard in Wisconsin, but the second to receive such certification. The Aldo Leopold Legacy Center outside Baraboo was the first to receive Platinum certification under the LEED for New Construction program in 2007, but was built after the Mead facility which was occupied in 2006. The LEED certification process for the Mead project was delayed due to the unique nature of coordinating documentation information from multiple donors of materials and services involved in the project. A third project, the renovated Hunzinger Construction Offices in Milwaukee received Platinum certification under the LEED for Commercial Interiors program and a private home in Madison received Platinum certification under the LEED for Homes program.