

## STRATEGIES TO BUILDING A LEED PLATINUM BUILDING:

- The building was designed to minimize impact to the site, configured to sit between a row of Linden trees to the west, a grove of conifers to the south east and the historic Oval to the north east.
- No new parking was added for this building. Instead, the existing two bus systems and off-campus parking were promoted. Bike racks, showers and changing rooms were included in the design to encourage students and faculty to bike/walk to school.
- A campus wide policy was initiated to give owners of hybrid or EV vehicles a discounted “Go-Green” parking pass.
- All storm water generated by the building and site improvements are absorbed within the site boundaries without run-off.
- 100% of the site hardscaping (walks and pavers) has a solar reflectance index (SRI) greater than 29 to reduce heat island effect.



- Native shrubs and grasses are planted to reduce the amount of potable water required for irrigation by 80%.
- Waterless urinals, dual flush toilets and metered faucets are some of the features used to reduce potable water consumption by 26%.
- The building was computer modeled to use 43% less energy than a conventional building of equal size. Much of this saving was achieved through excellent exterior insulation, Solarban insulated glass, insulated fiberglass panels, window shades, energy efficient lights, campus steam heating, VAV units and ground water cooling via “pump and dump” wells. After one complete year of building use by students and faculty, actual meter readings show a 55% energy savings.
- A mature Larch tree had to be removed as it was too close to the foundation. Its wood was kiln dried and milled locally. It makes up half the flooring in the Gathering Place rotunda. The rest of T&G flooring, ceiling, wood sills and casing came from sustainably harvested Montana larch.



- Wood stains used on the flooring are made from soybean oils.
- Gabion boxes used for landscape retaining walls are filled with rocks salvaged from site excavation. This saved on use of concrete for retaining walls.
- The concrete used in construction had 20% fly ash to reduce Portland cement use. Fly ash is a waste product of coal burnt for power generation. Portland cement has high embodied energy in its production.
- Twelve logs used to support the inner circle of the rotunda floor were salvaged from the Blackfoot River’s Milltown Dam Superfund clean-up project. These logs had been submerged for over 70 years. They were corn-cob blasted on site & hand-hewn with an axe by local craftsmen.
- Structural columns & beams in the rotunda are made from parallel strand lumber (PSL) which uses smaller diameter lumber, achieves higher strength than glulam’s and yields less construction waste.
- Steel is used as the primary structural material. Domestic US steel contains 32%-88% recycled content depending on which process was used to melt the steel.
- The building envelope is constructed of 6” structural insulated panels (SIPs) that are made of a polystyrene core sandwiched between two layers of OSB panels. The rotunda roof has a 12” SIP panel. The SIP panels have high insulation value, are structural, fit tightly to minimize air leaks and are made to sizes required, thus eliminating wood waste on site. The SIP panels used were made in Belgrade, Montana.
- Concrete masonry units (CMU) are used for the exterior envelope. This is a low maintenance exterior with a long life span. The CMU also contains 25% post-consumer recycled content and 75% pre consumer recycled content.



- Hallways are decorated with Dakota Burl panels, made of agrifiber and sunflower hulls.
- 24% of the materials used were made and shipped within a 500 mile radius of the site.
- 85% of waste material generated during construction was diverted from landfills. Local recycling facilities accepted these materials for salvage.
- 100% of the roofing material used is highly reflective, thus reducing heat island effect.
- Interior and exterior light fixtures are highly efficient, use less energy and are located to minimize light trespass beyond site boundaries.
- 100% of room occupants have access to lighting controls.
- A permanent CO2 monitoring system is in place to ensure adequate amounts of fresh outdoor air is delivered to each space. A high CO2 level indicates poor indoor air quality.
- Indoor wood materials, drywall and finish products were wrapped in plastic until the building was water-tight so they would not get wet and lead to mold growth. The air handling unit and ductwork were also wrapped until final commissioning so dust would not contaminate the system. MERV 8 filters were used during commissioning and then replaced with MERV 13 filters upon final acceptance.
- The building’s indoor air was flushed out with 100% fresh outdoor air prior to final acceptance to remove any lingering odors from finish materials used.
- Low VOC (volatile organic compound) indoor adhesives, sealants, paints, carpet and glues were used.
- 62% of spaces have access to temperature controls to modify personal comfort levels.
- 94% of regularly occupied spaces have natural daylight and views. Studies have shown that people are more productive and happier in spaces with natural daylight and views.
- Only Green cleaning products are used by custodians per UM’s campus policy.
- UM purchased 70% of the building’s electricity from renewable sources for a 2 year period. This was done through the purchase of Green-e-certified REC’s (Renewable Energy Certificates).
- UM now offers a full 3 credit semester course covering sustainable building practices, LEED and case studies. The course was one of four Innovation in Design LEED points.

The University of  
**Montana**



**The Payne Family  
Native American Center**

**LEED Platinum**

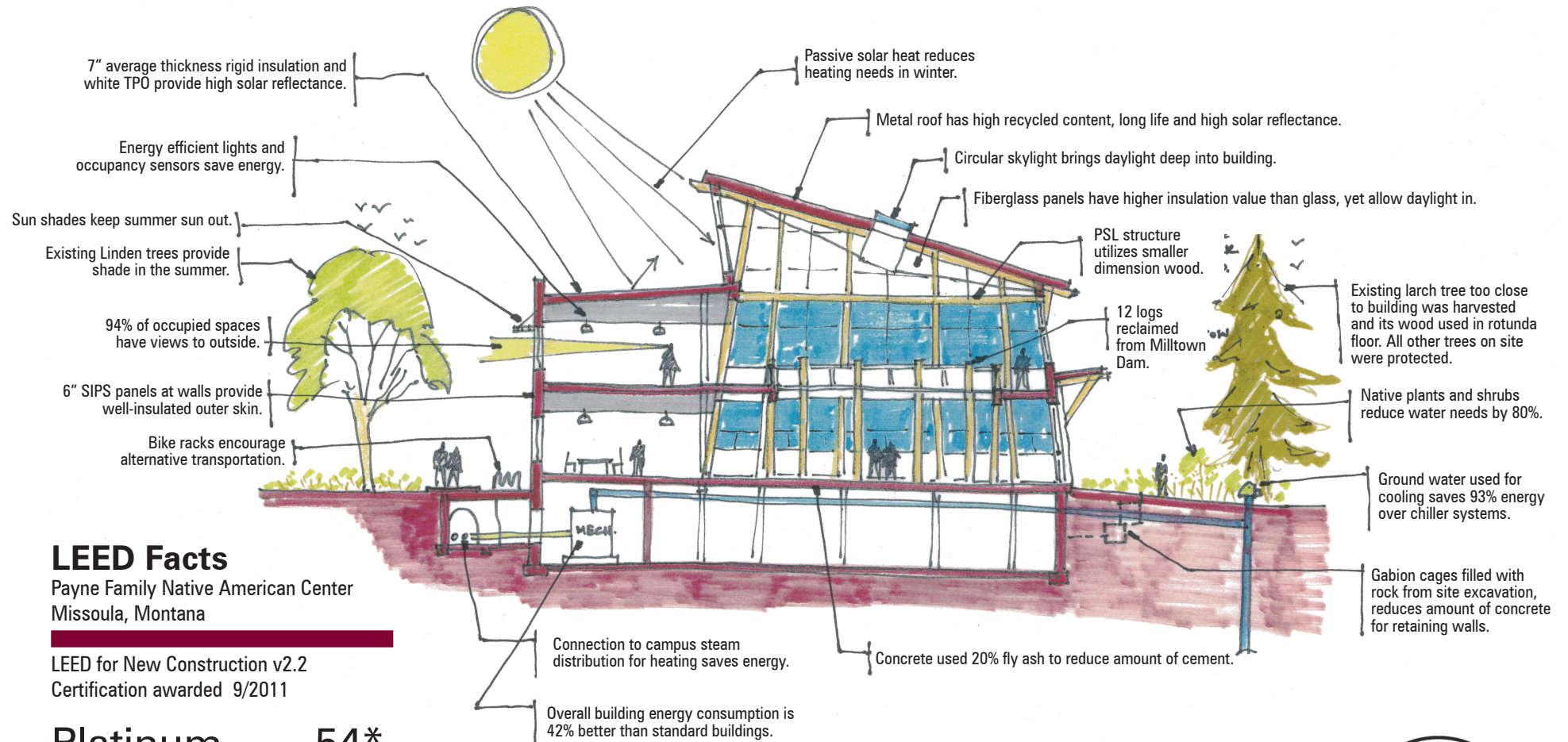
## PROJECT BACKGROUND

The University of Montana Payne Family Native American Center represents an extraordinary opportunity as the first off-reservation building in the state of Montana designed to symbolically represent Native American culture and Montana's twelve tribes. The Center is the first LEED building on the University campus.

A key aspect of Native American philosophy shared by all tribes is a deep respect and integration with the natural world. To reflect this, the program defined site strategies, building materials and systems and construction processes to reduce environmental impacts and create a building highly responsive to the Montana climate, using historic Native American architectural influences. Tribal members gathered to determine preservation of existing trees, the building location, size of the circular gathering space, and key cultural elements for the building. Additional program requirements include: a boldly Native American building; daylighting, use of local natural materials; recognition of all twelve Montana tribes; a building provides education about contemporary Native American people; the green aspects of the building itself; the highest LEED certification level possible and accomplished within budget; and a solution where Native people are not "put on display", but where all people can learn from Native America.



# The Payne Family Native American Center LEED (Leadership in Energy and Environmental Design) Platinum Building components



## LEED Facts

Payne Family Native American Center  
Missoula, Montana

LEED for New Construction v2.2  
Certification awarded 9/2011

**Platinum 54\***

Sustainable Sites	13/14
Water Efficiency	2/5
Energy & Atmosphere	14/17
Materials & Resources	6/13
Indoor Environ. Quality	15/15
Innovation & Design	4/5

\* Out of a possible 69 points

***"Okii Nookoosak, anooyi kookoonoonii aakitokakii stotohsop."***

*When wisdom is shared, knowledge is exchanged and virtue glorified, a lodge becomes a well-spring of learning for all who enter.*

-Earl Barlow, (Blackfeet) Educator

