

LEEDing Wyoming

Jeff Austin

Aim

Find out why so few LEED certified buildings exist in Wyoming.

What is LEED?

- United States Green Building Council
- Leadership in Energy and Environmental Design
- Verification system for green building
- Popularize and increase environmentally friendly building



What is LEED?

LEED 2009 FOR NEW CONSTRUCTION AND MAJOR RENOVATIONS PROJECT CHECKLIST

Sustainable Sites

26 Possible Points

<input checked="" type="checkbox"/> Prerequisite 1	Construction Activity Pollution Prevention	Required	
<input type="checkbox"/> Credit 1	Site Selection		1
<input type="checkbox"/> Credit 2	Development Density and Community Connectivity		5
<input type="checkbox"/> Credit 3	Brownfield Redevelopment		1
<input type="checkbox"/> Credit 4.1	Alternative Transportation—Public Transportation Access		6
<input type="checkbox"/> Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms		1
<input type="checkbox"/> Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles		3
<input type="checkbox"/> Credit 4.4	Alternative Transportation—Parking Capacity		2
<input type="checkbox"/> Credit 5.1	Site Development—Protect or Restore Habitat		1
<input type="checkbox"/> Credit 5.2	Site Development—Maximize Open Space		1
<input type="checkbox"/> Credit 6.1	Stormwater Design—Quantity Control		1
<input type="checkbox"/> Credit 6.2	Stormwater Design—Quality Control		1
<input type="checkbox"/> Credit 7.1	Heat Island Effect—Nonroof		1
<input type="checkbox"/> Credit 7.2	Heat Island Effect—Roof		1
<input type="checkbox"/> Credit 8	Light Pollution Reduction		1

Water Efficiency

10 Possible Points

<input checked="" type="checkbox"/> Prerequisite 1	Water Use Reduction	Required	
<input type="checkbox"/> Credit 1	Water Efficient Landscaping		2-4
<input type="checkbox"/> Credit 2	Innovative Wastewater Technologies		2
<input type="checkbox"/> Credit 3	Water Use Reduction		2-4

Energy and Atmosphere

35 Possible Points

<input checked="" type="checkbox"/> Prerequisite 1	Fundamental Commissioning of Building Energy Systems	Required	
<input checked="" type="checkbox"/> Prerequisite 2	Minimum Energy Performance	Required	
<input checked="" type="checkbox"/> Prerequisite 3	Fundamental Refrigerant Management	Required	
<input type="checkbox"/> Credit 1	Optimize Energy Performance		1-19
<input type="checkbox"/> Credit 2	On-site Renewable Energy		1-7
<input type="checkbox"/> Credit 3	Enhanced Commissioning		2
<input type="checkbox"/> Credit 4	Enhanced Refrigerant Management		2
<input type="checkbox"/> Credit 5	Measurement and Verification		3
<input type="checkbox"/> Credit 6	Green Power		2

Materials and Resources

14 Possible Points

<input checked="" type="checkbox"/> Prerequisite 1	Storage and Collection of Recyclables	Required	
<input type="checkbox"/> Credit 1.1	Building Reuse—Maintain Existing Walls, Floors and Roof		1-3
<input type="checkbox"/> Credit 1.2	Building Reuse—Maintain Existing Interior Nonstructural Elements		1
<input type="checkbox"/> Credit 2	Construction Waste Management		1-2
<input type="checkbox"/> Credit 3	Materials Reuse		1-2
<input type="checkbox"/> Credit 4	Recycled Content		1-2

<input type="checkbox"/> Credit 5	Regional Materials		1-2
<input type="checkbox"/> Credit 6	Rapidly Renewable Materials		1
<input type="checkbox"/> Credit 7	Certified Wood		1

Indoor Environmental Quality

15 Possible Points

<input checked="" type="checkbox"/> Prerequisite 1	Minimum Indoor Air Quality Performance	Required	
<input checked="" type="checkbox"/> Prerequisite 2	Environmental Tobacco Smoke (ETS) Control	Required	
<input type="checkbox"/> Credit 1	Outdoor Air Delivery Monitoring		1
<input type="checkbox"/> Credit 2	Increased Ventilation		1
<input type="checkbox"/> Credit 3.1	Construction Indoor Air Quality Management Plan—During Construction		1
<input type="checkbox"/> Credit 3.2	Construction Indoor Air Quality Management Plan—Before Occupancy		1
<input type="checkbox"/> Credit 4.1	Low-Emitting Materials—Adhesives and Sealants		1
<input type="checkbox"/> Credit 4.2	Low-Emitting Materials—Paints and Coatings		1
<input type="checkbox"/> Credit 4.3	Low-Emitting Materials—Flooring Systems		1
<input type="checkbox"/> Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products		1
<input type="checkbox"/> Credit 5	Indoor Chemical and Pollutant Source Control		1
<input type="checkbox"/> Credit 6.1	Controllability of Systems—Lighting		1
<input type="checkbox"/> Credit 6.2	Controllability of Systems—Thermal Comfort		1
<input type="checkbox"/> Credit 7.1	Thermal Comfort—Design		1
<input type="checkbox"/> Credit 7.2	Thermal Comfort—Verification		1
<input type="checkbox"/> Credit 8.1	Daylight and Views—Daylight		1
<input type="checkbox"/> Credit 8.2	Daylight and Views—Views		1

Innovation in Design

6 Possible Points

<input type="checkbox"/> Credit 1	Innovation in Design		1-5
<input type="checkbox"/> Credit 2	LEED Accredited Professional		1

Regional Priority

4 Possible Points

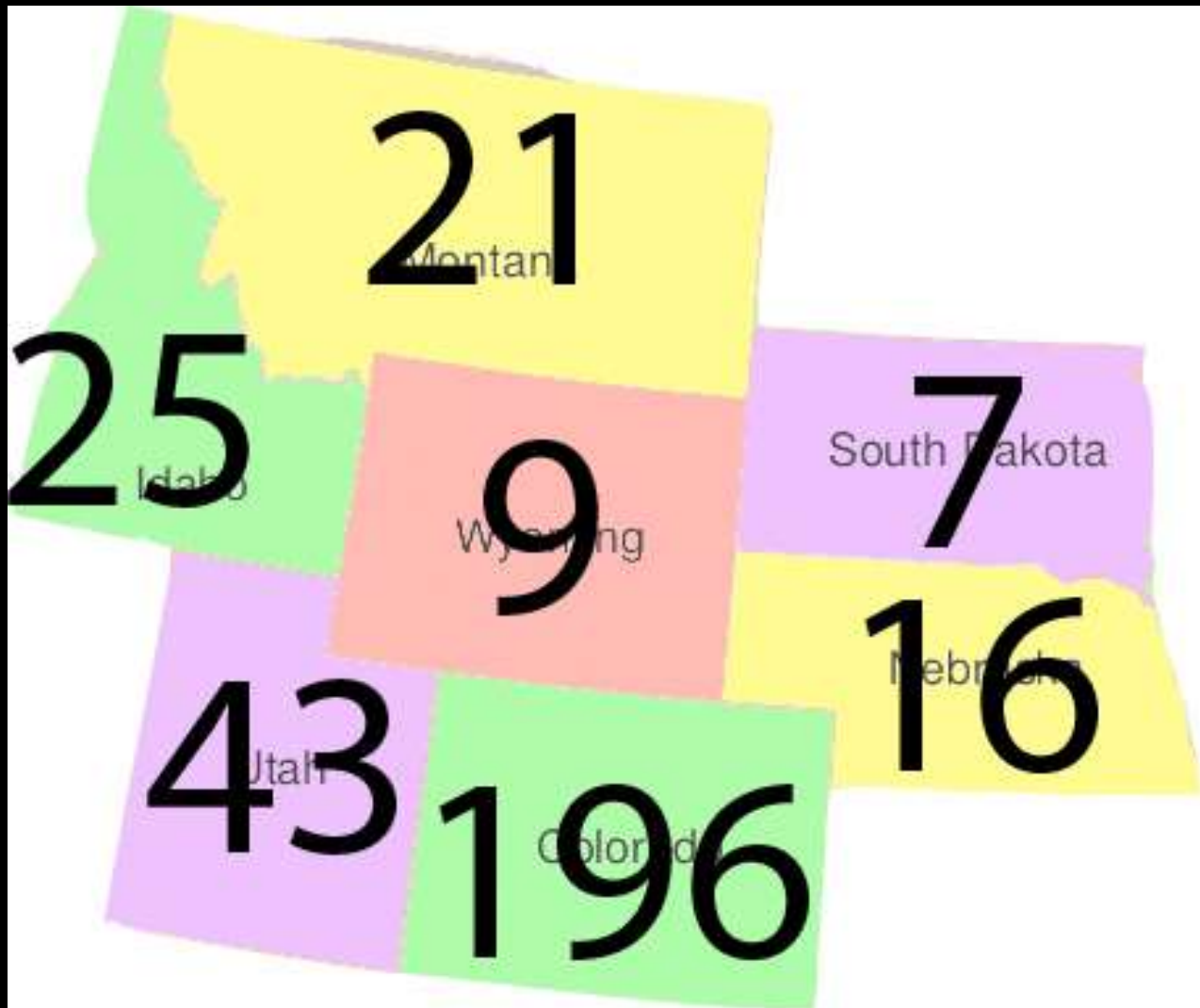
<input type="checkbox"/> Credit 1	Regional Priority		1-4
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LEED 2009 for New Construction and Major Renovations

100 base points; 6 possible Innovation in Design and 4 Regional Priority points

Certified	40-49 points
Silver	50-59 points
Gold	60-79 points
Platinum	80 points and above

Comparing Surrounding States



Wyoming's LEED Buildings

2 Platinum Certified

4 Gold Certified

2 Silver Certified

1 Certified

Wyoming's LEED Buildings

Laurance S. Rockefeller Preserve Center

Moose, WY

Platinum Certified



Wyoming's LEED Buildings

Children's Village

Cheyenne Botanic Gardens, Cheyenne, WY

Platinum Certified



<http://inhabitat.com/cheyenne-childrens-leed-platinum-village-is-a-place-to-grow/>

Wyoming's LEED Buildings

Laramie County Public Library

Cheyenne, WY

Gold Certified



<http://www.ilovelibraries.org/news/libraryshowcase/laramie.cfm>

Wyoming's LEED Buildings

Old Faithful Visitor Education Center

Yellowstone National Park, WY

Gold Certified



https://www.djc.com/stories/images/20100902/OldFaithfulVC_exterior_big.jpg

Wyoming's LEED Buildings

Jackson Hole Golf and Tennis Clubhouse

Jackson, WY

Gold Certified



<http://www.jhgtc.com/info/about.club.asp>

Wyoming's LEED Buildings

Davey Jackson Elementary School

Jackson, WY

Gold Certified



http://www.facebook.com/note.php?note_id=156560924379332&comments



<http://www.durrant.com/site-com/assets/docs/press-releases/Davey-Jackson-LEED->

Wyoming's LEED Buildings

Washakie Museum and Cultural Center

Worland, WY

Silver Certified



http://uwacadweb.uwyo.edu/robertshistory/hyperlinks/wyoming_almanac.htm

Wyoming's LEED Buildings

Hotel Terra

Teton Village, WY

Silver Certified

http://www.thegreenconnoisseur.com/c/travel/lodging/hotel_terra_the_green_jewel_of_jackson_hole.html



<http://www.theskichannel.com/news/resorts/20091202/Hotel-Terra-Jackson-Hole->



<http://hd.engadget.com/2008/03/06/hotel-terra-jackson-hole-getting-hd-iptv-hd-vod/>

Wyoming's LEED Buildings

Greybull Elementary School

Greybull, WY

Certified



http://www.planone.com/projects_educational_detail.php?pkProjects=10

Hypothesis

- Remote Locations
- Harsh Climates

Research

- Surveys sent to those who worked on projects
- Results collected
- Results reported

Survey Letter

Name

Position

Company

Mailing Address

City, State Zip

October 15, 2010

Dear Sir or Madam,

I am currently a junior Architectural Engineering student at the University of Wyoming with plans to continue on to receive a Masters of Architecture Degree. I was awarded an EPSCoR Research Fellowship, under Dr. Anthony Denzer, for the Fall of 2010 and I need your help to complete my research.

I am asking for your insight as someone who took an active role in one of the few LEED certified buildings in Wyoming. This project aims to determine whether the LEED system has any structural problems that are specific to Wyoming projects.

Please take some time to fill out the included questionnaire and, using the self-addressed-stamped envelope or e-mail, return the survey to me by November 15, 2010. Your help is greatly appreciated.

Sincerely,

Jeffrey Austin

Survey

"LEED in Wyoming" Survey
UW Dept of Civil & Architectural Engineering
Contact: Jeff Austin [jaustin9@uwyo.edu]

Please complete and return using the self-addressed-stamped envelope, or reply by e-mail to Jeff Austin [jaustin9@uwyo.edu]. We would appreciate your responses by November 15, 2010 if possible.

Your Name: _____

Position: _____

Company: _____

Project Name: _____

LEED version: _____

LEED score: _____

1. Were there any LEED credits that were impossible for your project to achieve? Please list and discuss.

2. Which LEED credits were possible but most difficult to achieve?

3. Which LEED credits were most difficult to document?

4. If your responses to questions 2 & 3 don't match, please discuss.

"LEED in Wyoming" Survey
UW Dept of Civil & Architectural Engineering
Contact: Jeff Austin [jaustin9@uwyo.edu]

5. Which LEED credits were easiest to achieve?

6. Did you find any LEED credits which encouraged a 'wrong' decision, due to circumstances peculiar to Wyoming?

7. Do you believe there are any barriers to LEED-certification that are particular to Wyoming or the region?

8. What were the added costs to build "green"?

9. What would you do differently?

Results

- Only 4 Surveys Received On Time
- Credit 5.2 Regional Materials
- Added Costs To Build “Green”
- Build According to LEED at the Beginning of the Project
- Innovative Wastewater Technology
- Extreme Climate Conditions

Conclusions

- Some LEED points are difficult to earn in Wyoming
 - Regional materials, added cost to build “green”, rainwater harvesting, and optimized energy performance
- LEED certification is still possible in Wyoming
- Forward to USGBC for their use