Next-Generation Codes:
A look backward and the road ahead

Great Plains Energy Codes Conference
October 18, 2012
Omaha, NE

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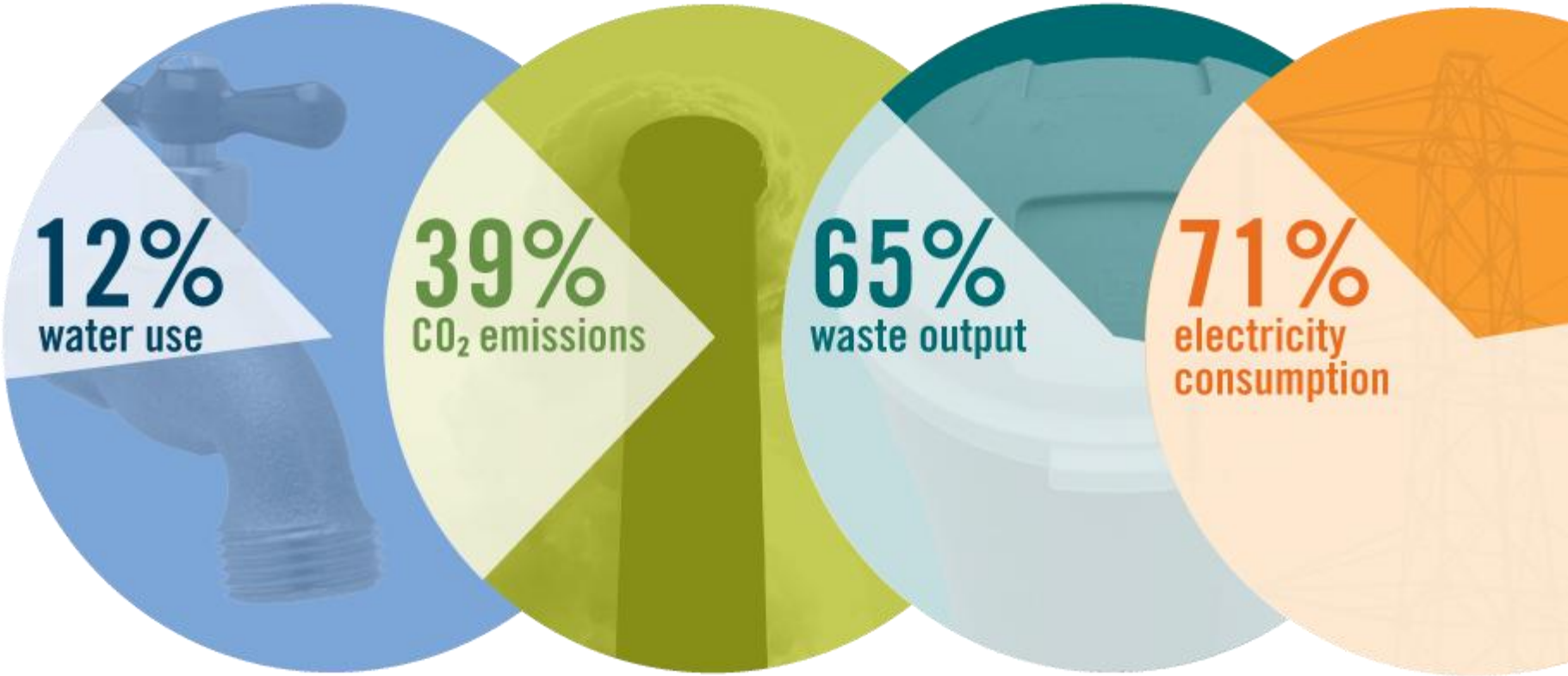
Will “Base Codes” Embrace an Enhanced Scope?

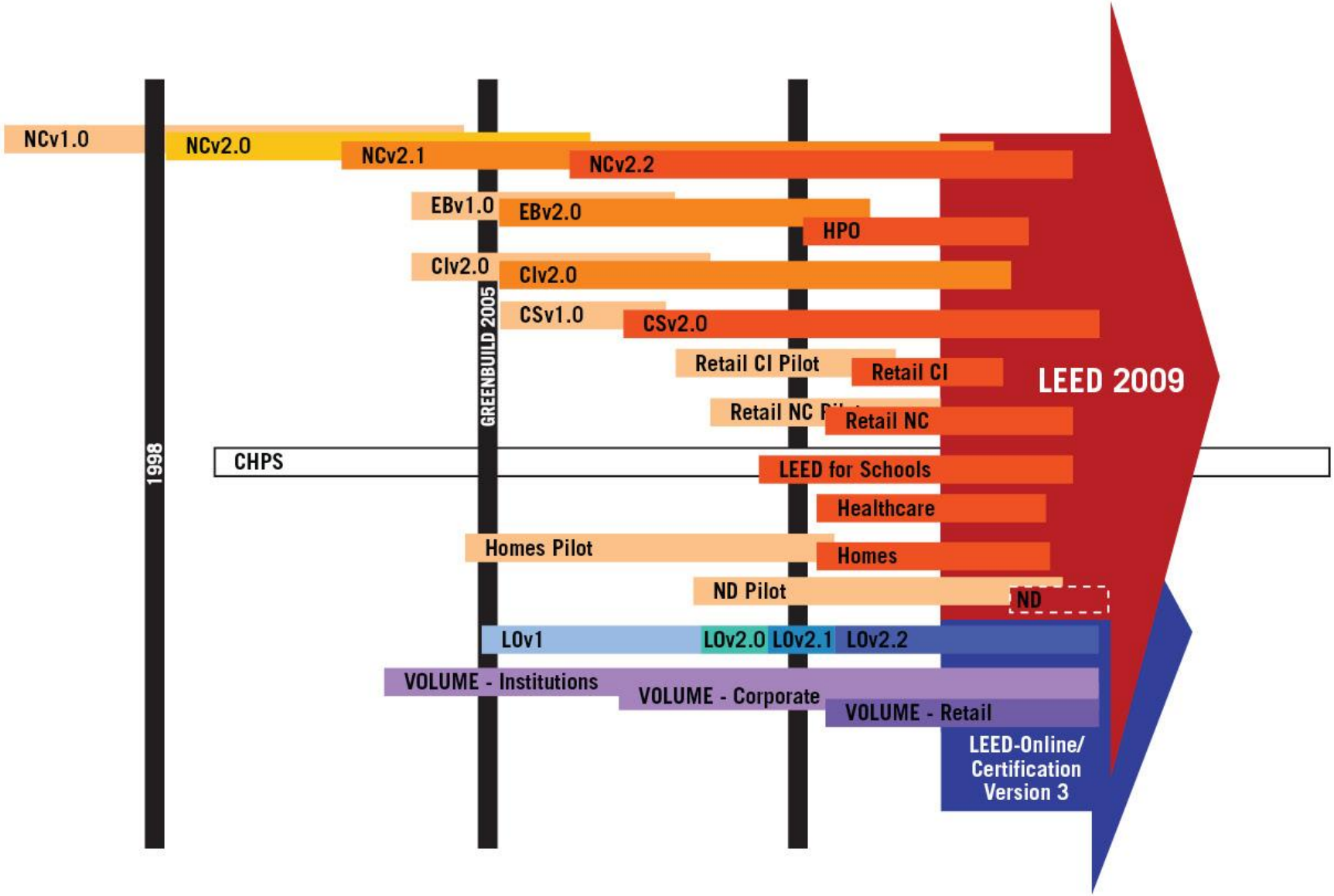
101.3 The purpose of this code is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to fire fighters and emergency responders during emergency operations.

Source: 2006 International Building Code

U.S. Building Impacts:



HISTORY OF LEED LAUNCHES



The World

Green buildings around the world

View »

LEED Projects	Size of LEED	All Projects
13,260	**2 Billion**	**75,560**
Certified LEED Projects	Sq. Ft. LEED Certified	Projects in GBIG

…and 23,000+ certified homes

Green Building Information Gateway

Find Places

Explore green building activity by location

Discover Projects

Learn what a LEED-Certified project did to earn its plaque

Browse Collections

Check out our curated collections of green building projects

Analyze Credits

See trends for individual LEED credits and find the projects that achieved them

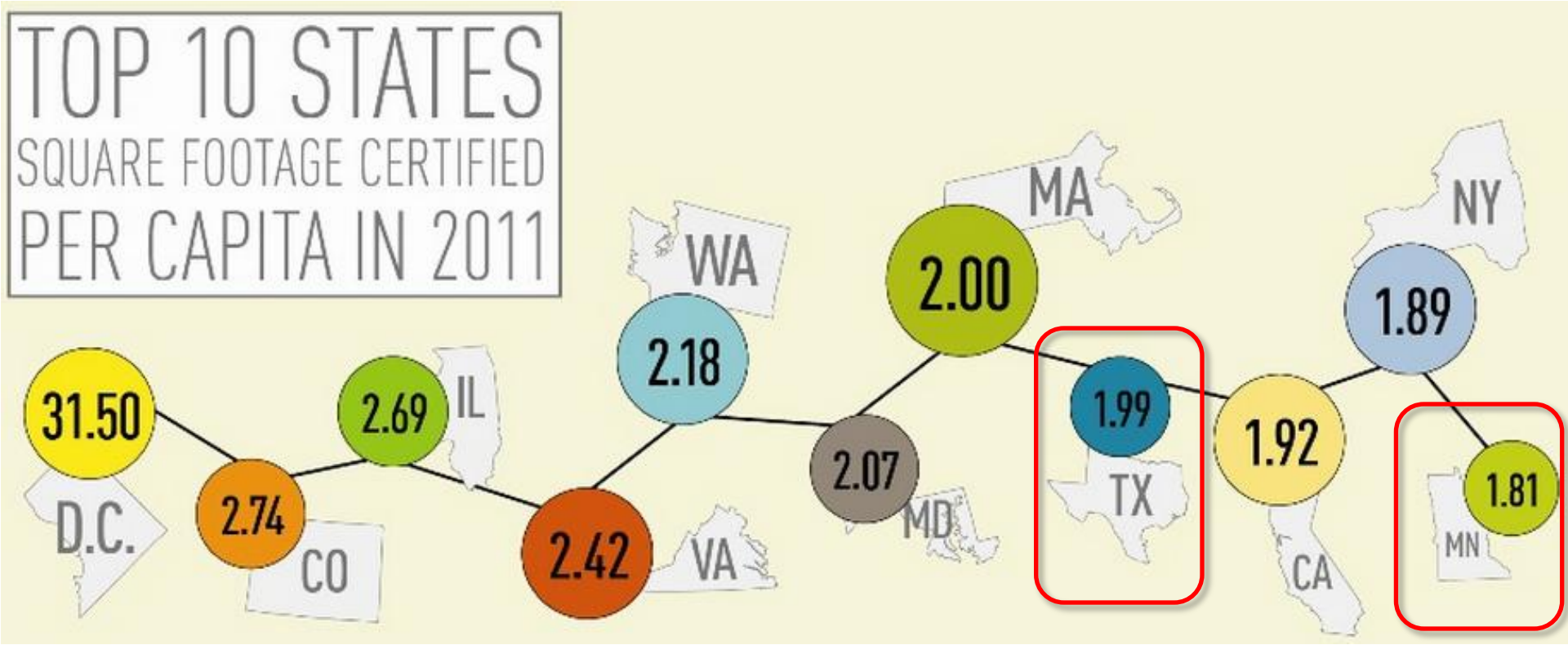
Places

How engaged is your market?

Choose a city, congressional district, state, country, or even the world, and analyze its green building activity by the number of LEED projects, LEED-Certified square footage, USGBC members, and credentialed green building professionals.

Try it:

- Shanghai, China
- Texas
- Chicago, Illinois


TOP 10 STATES
SQUARE FOOTAGE CERTIFIED
PER CAPITA IN 2011
31.50
D.C.
2.74
CO
2.69
IL
2.42
VA
2.18
WA
2.07
MD
2.00
MA
1.99
TX
1.92
CA
1.89
NY
1.81
MN

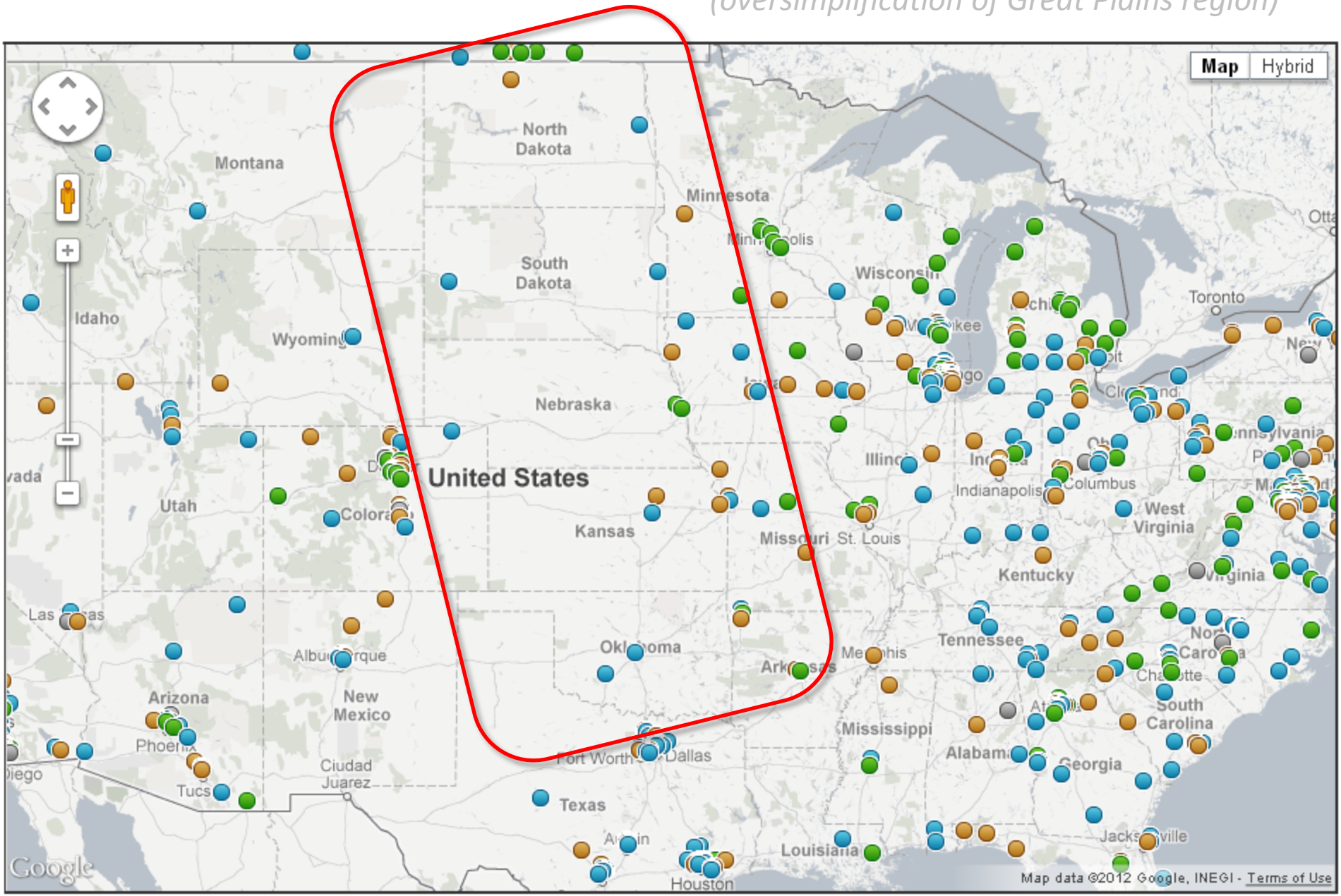
(As of 1/1/2012)

Top 10 Cities for LEED Project Activity

City, State	Registered	Certified	Grand Total
New York, NY	639	242	**881**
Washington, DC	649	231	**880**
Chicago, IL	472	295	**767**
Houston, TX	381	190	**571**
San Francisco, CA	335	202	**537**
Los Angeles, CA	302	139	**441**
Seattle, WA	264	165	**429**
Atlanta, GA	248	154	**402**
San Diego, CA	233	118	**351**
Grand Total	**3,523**	**1,736**	**5,259**

(As of 6/1/2012)

(oversimplification of Great Plains region)



LEED in the Great Plains

ND – 20 certified (54 registered), 0.8M ft^2

SD – 30 certified (67 registered), 1.6M ft^2 ← *every day*

NE – 44 certified (80 registered), 4.3M ft^2

OK – 47 certified (159 registered), 5.0M ft^2

KS – 78 certified (174 registered), 6.2M ft^2

IA – 114 certified (222 registered), 8.7M ft^2

MO – 165 certified (397 registered), 16.4M ft^2

MN – 197 certified (301 registered), 36.6M ft^2

CO – 416 certified (678 registered), 57.3M ft^2

TX – 791 certified (2,016 registered), 175.2M ft^2

Omaha, Nebraska

Benchmark »

52	56	19	2.458 M	32%	21%	63%
Total projects	Average Walk Score	LEED Certified Projects	LEED Certified Sq. Ft.	Use renewables for some energy	Track ongoing energy performance	Reduced water use by ≥ 20%

LEED Certified Projects by Gross Sq. Ft.

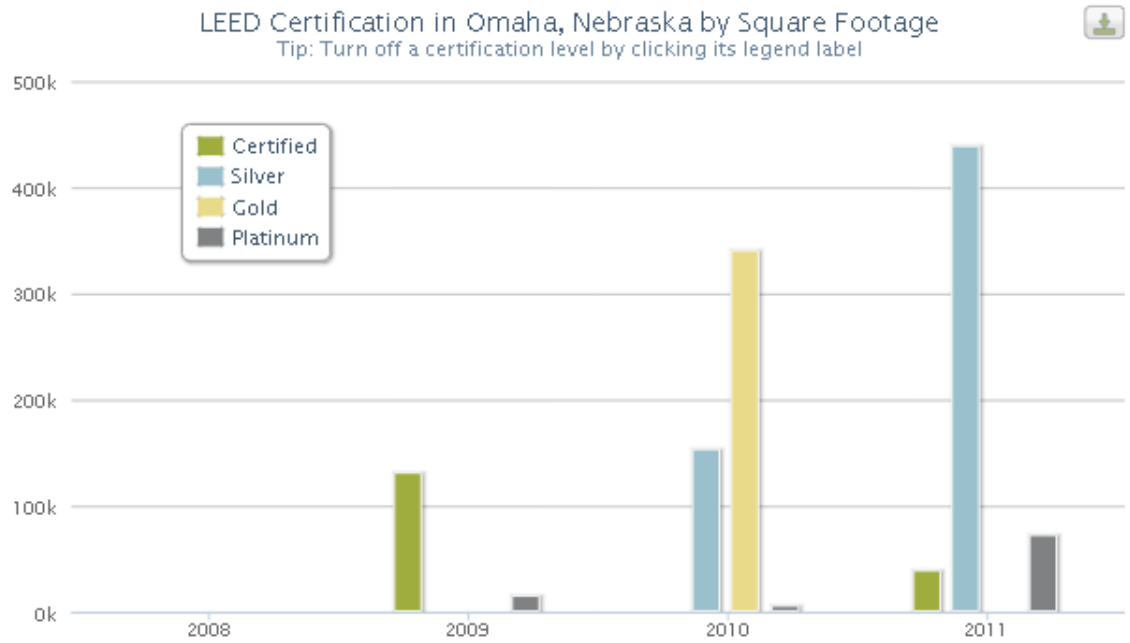
LEED Certified Projects by Project Count

LEED EB vs. NC Trends by Sq. Ft.

LEED EB vs. NC by Project Count

Top Project Owner Types

LEED Professional Credentials



GBIG

Search places and projects

PLACES | PROJECTS | COLLECTIONS | CREDITS | What Is GBIG?

Home » Places » The World » United States » Nebraska » Omaha » ALL PROJECTS

Omaha, Nebraska

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- **LEED Certified Projects by Project Count**
- LEED EB vs. NC Trends by Sq. Ft.
- LEED EB vs. NC by Project Count
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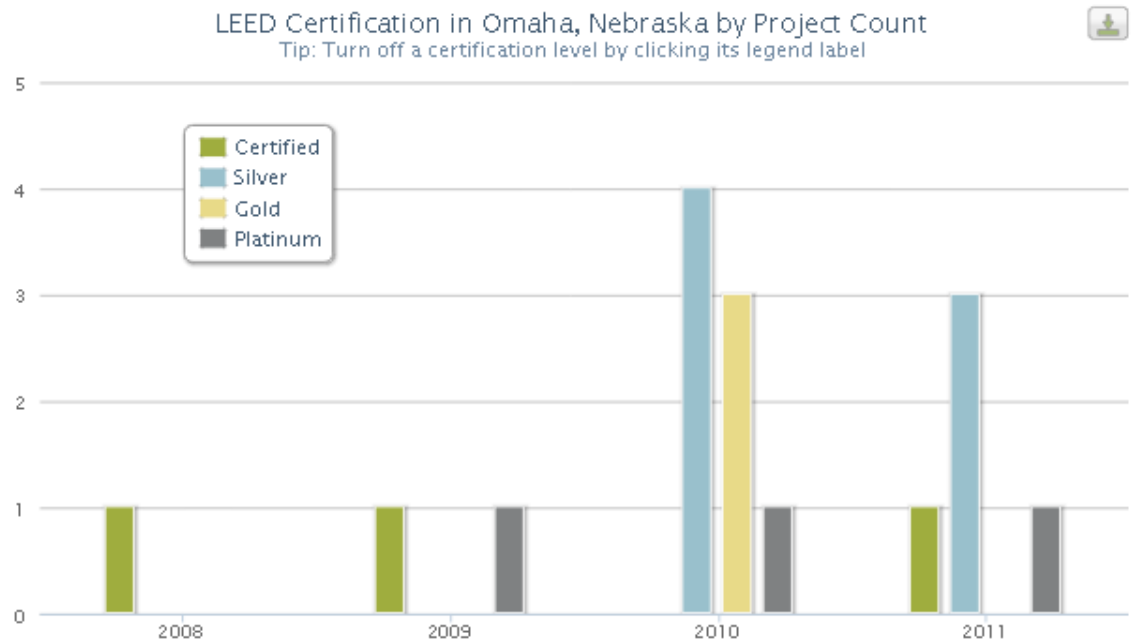
- LEED Professional Credentials



Omaha, Nebraska

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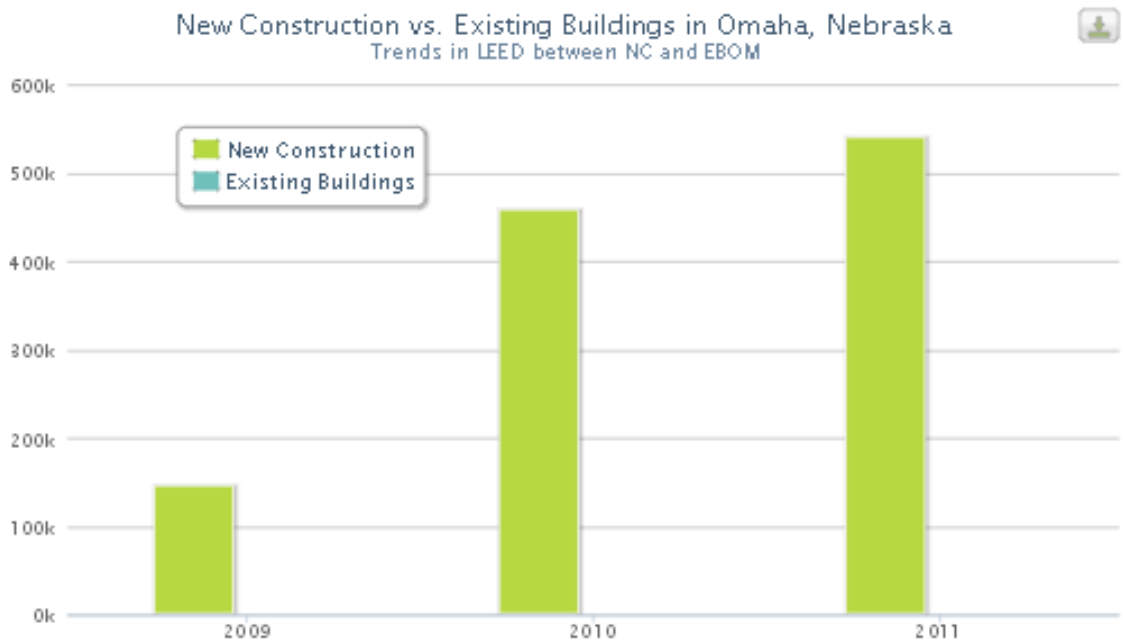

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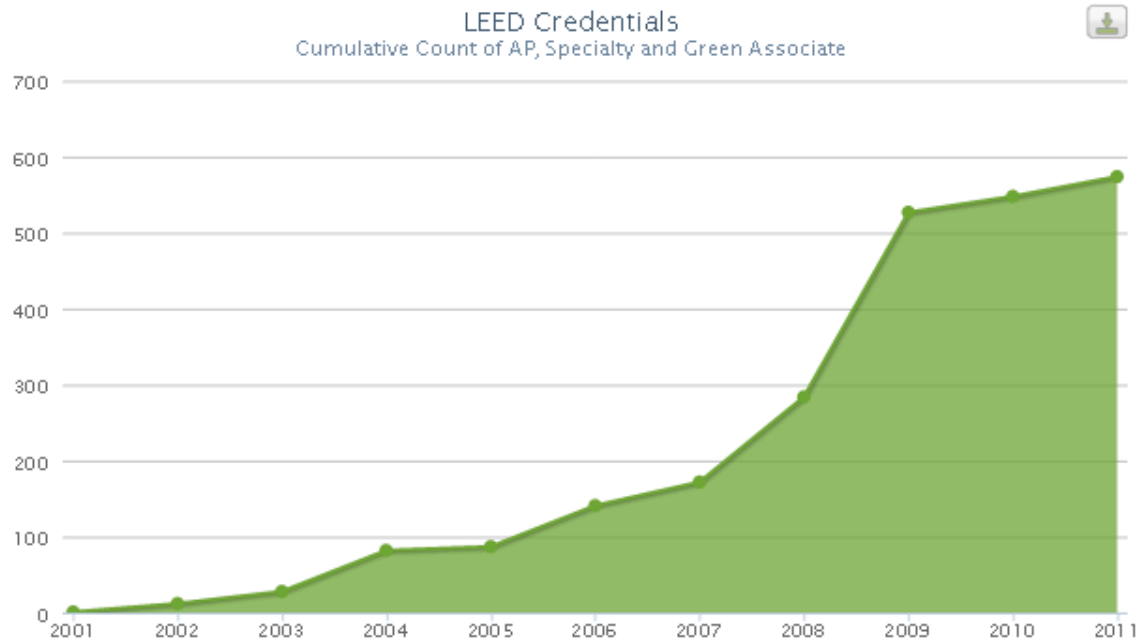

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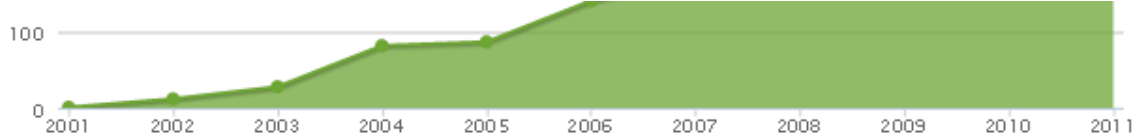


Overview

Population (2009 est.)	454,700	

LEED Certification

LEED® Certified Projects	19	VIEW
LEED Certified Gross Sq. Ft.	2.458 Million	
LEED Registered Projects	33	VIEW
LEED Registered Gross Sq. Ft.	6.59 Million	
Government Owned LEED Certified Projects	3	VIEW
Government Owned LEED Certified Gross Sq. Ft.	202,000	
LEED ND Certified Projects	1	VIEW

Members and Professionals

LEED Accredited Professionals	603
USGBC Members	26

Building Performance

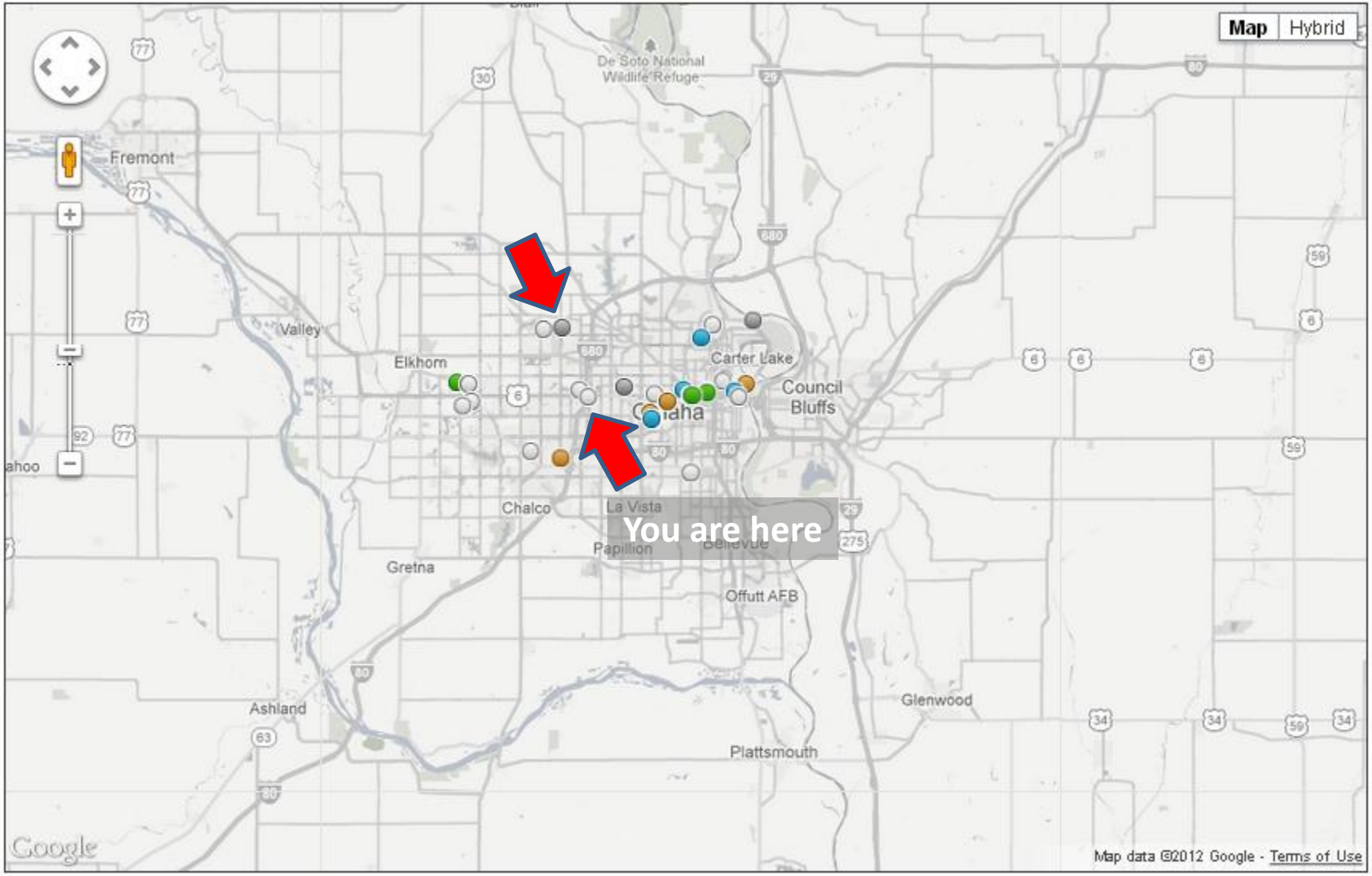
ENERGY STAR® Buildings & Plants	46
Building Performance Partnership Buildings	2

Resources

- LEED Certification
- LEED Professional Credentials
- USGBC Membership
- USGBC: Building Performance Partnership
- ENERGY STAR

Projects

View: Table



Note Projects are listed only with the consent of each project's primary contact person. Please contact the project administrator to update the project confidentiality information in LEED Online

Admin Export these results to a spreadsheet.

GBIG

Search places and projects

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Home » The World » United States » Nebraska » Omaha » 4940 North 118 Street, Omaha, NE, US (2 projects)

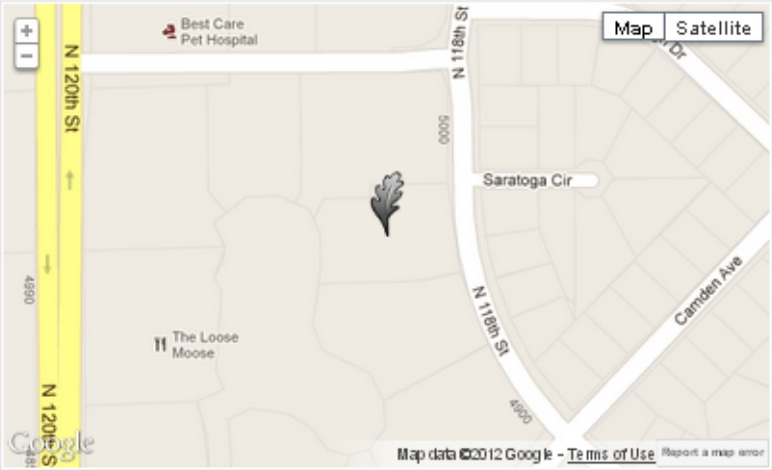
Benchmark »

4940 Building *(Morrissey Engineering)*

Organization: 4940 Building LLC
4940 N 118th St
Omaha, NE 68164
US
Fix this location

Map View

Street View



Project Data

Owner Sector	Space Type Use	Gross Sq. Ft.	Total Area
Corporate	Office	14,350	51,460
Similar to 36% of projects	Similar to 37% of projects	Similar to 3% of projects	Similar to 7% of projects

Collections

Add to My Collections

Found in these collections:

- Fidelity National Financial: LEED Data Report
- LEED Project Profiles
- Nebraska Flatwater Chapter

Other projects at this address

- 4940 Building

You might also like...

Highest scoring projects in LEED NC 2.2:

- 66/69 502 Second Street
- 63/69 Benedictine Women of Madison
- 62/69 Johnson Controls Glendale Building 3
- 62/69 Turbo Energy Limited

Certifications

LEED NC 2.2 Platinum certified

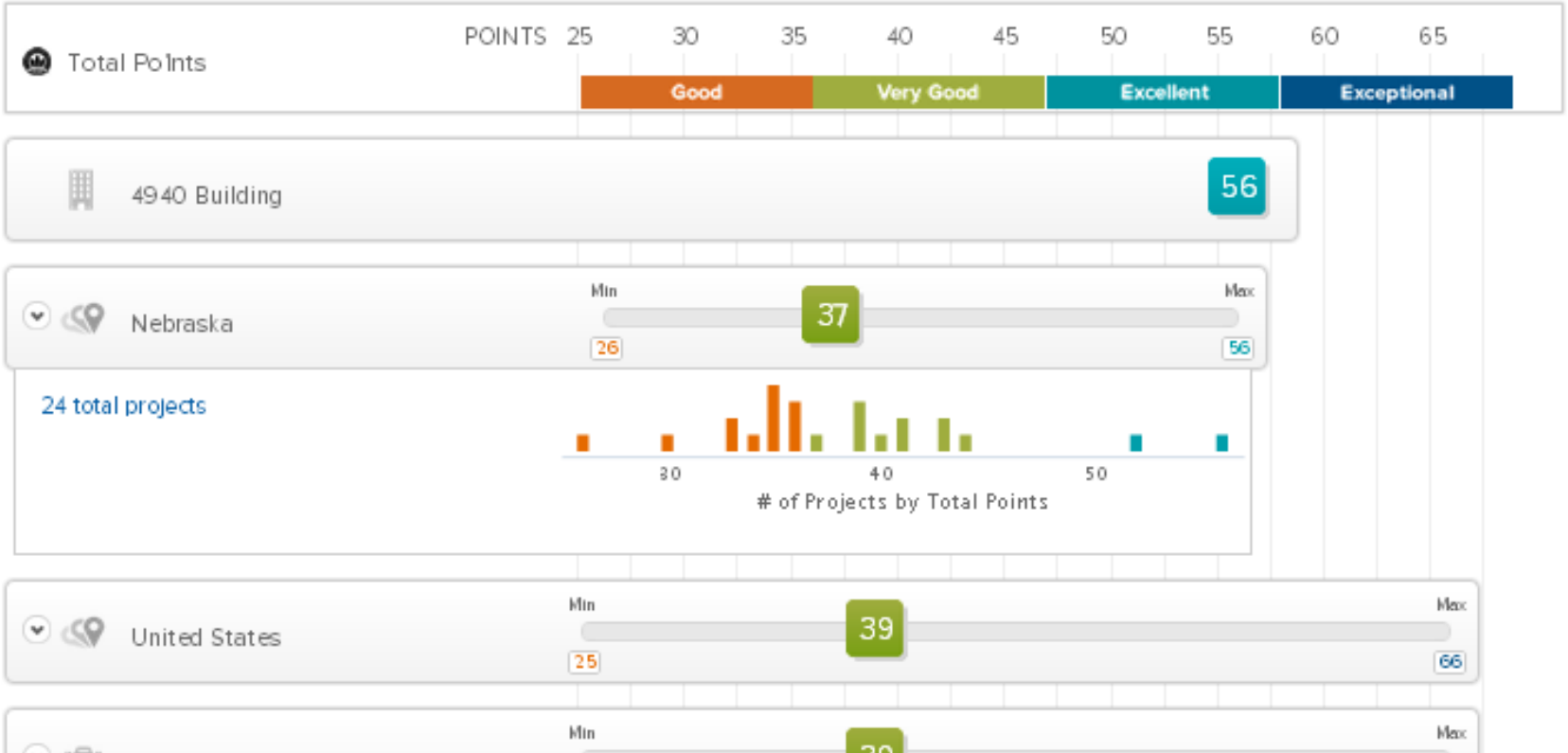
56 of 69 possible points.

Awarded October 02, 2009

Benchmark 4940 Building

LEED NC 2.2 Credit Achivement | Total Points

Benchmarks



Projects

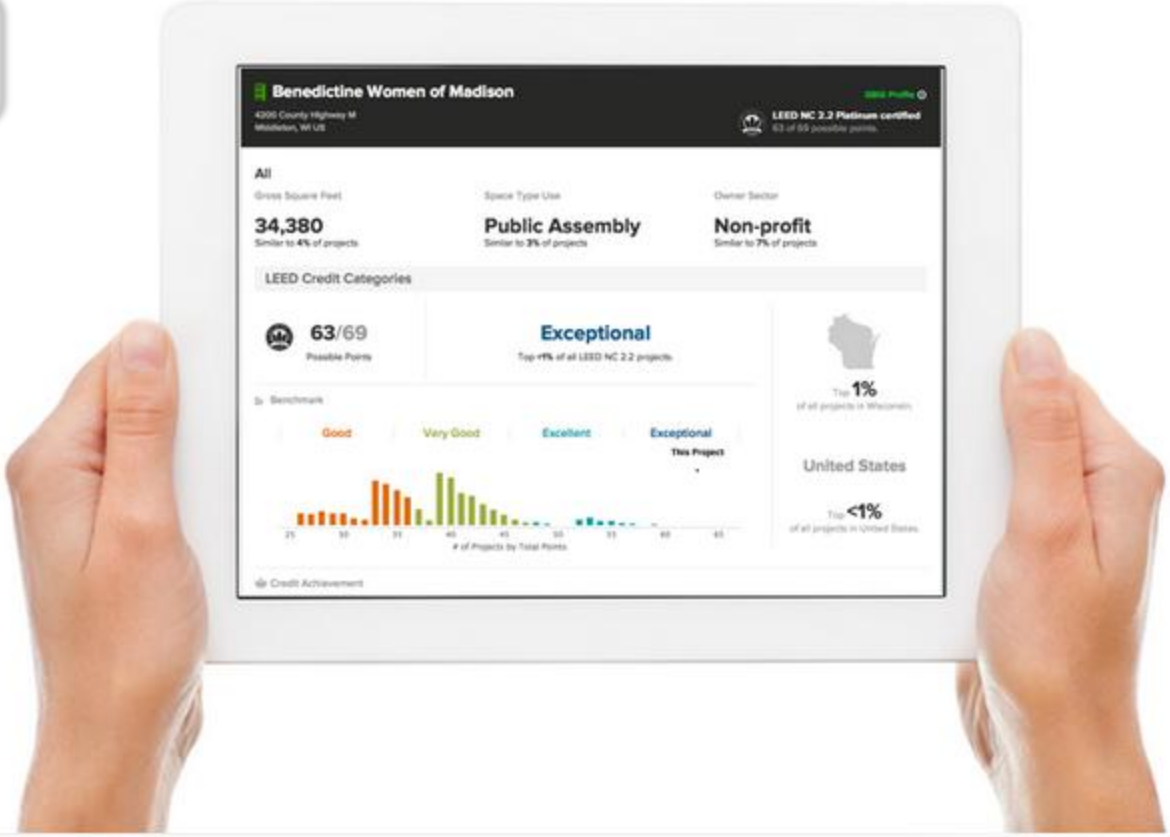
What does the **LEED** plaque mean?

Explore the world of thousands of reviewed projects and see what they are doing to optimize energy efficiency, reduce water usage, improve indoor air quality, preserve green space and habitats, and source sustainable materials.

View resource use-reduction goals based on design or operations and view comparative metrics on the project dashboard.

Try it:

- The Pyramid
- Wake Forest Town Hall
- USGBC Headquarters Dashboard



GBIG

Search places and projects

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Home » Places » The World » United States » Iowa

Benchmark Iowa

LEED NC 2.2

Total Points

- LEED NC 2.2
- LEED NC 2.1
- LEED EB 2009
- LEED CI 2.0
- LEED NC 2009
- LEED Retail NC Pilot
- LEED Retail CI
- LEED CS 2.0
- LEED NC 2.0

- Total Points
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Sustainable Sites
- Water Efficiency
- Innovation in Design

Benchmarks

Total Points

POINTS 25 30 35 40 45 50 55 60 65

Good | Very Good | Excellent | Exceptional

Iowa

Min 26 — 37 — Max 55

GBIG

Search places and projects

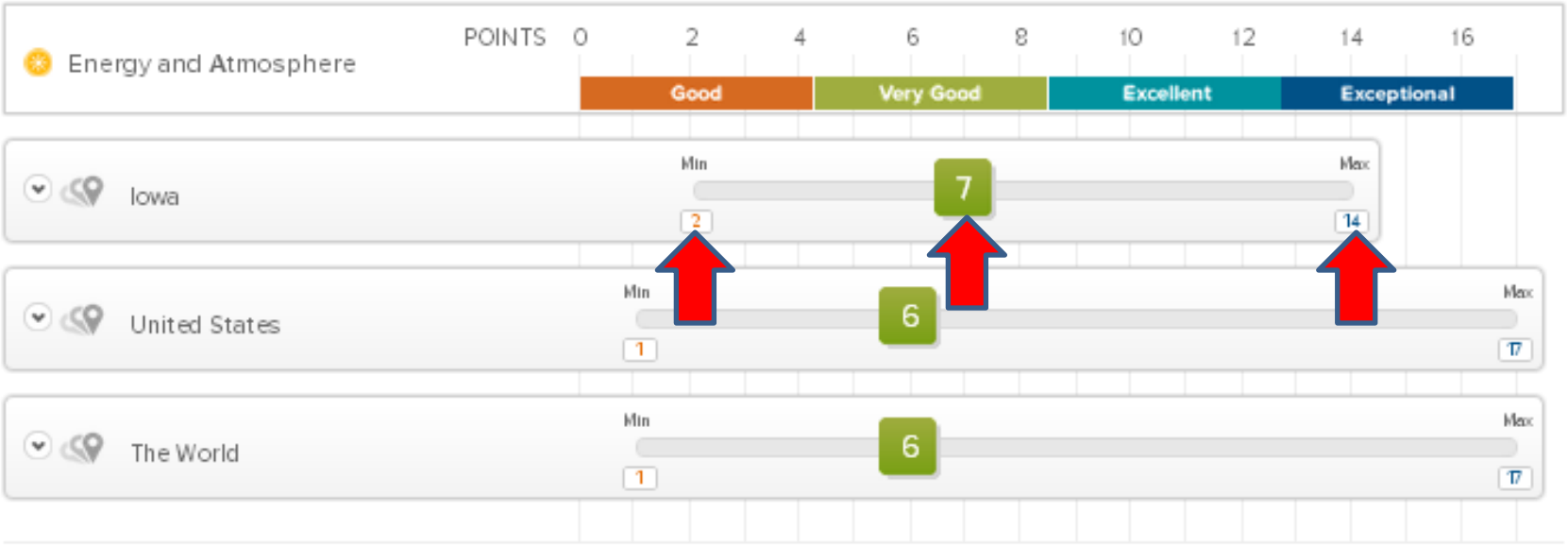
PLACES | PROJECTS | COLLECTIONS | CREDITS | What Is GBIG?

Home » Places » The World » United States » Iowa

Benchmark Iowa

LEED NC 2.2 | Energy and Atmosphere

Benchmarks



GBIG

Search places and projects

PLACES | PROJECTS | COLLECTIONS

Home » Places » The World » United States » Iowa

Benchmark Iowa

LEED NC 2.2

Energy and Atmosph

Benchmarks

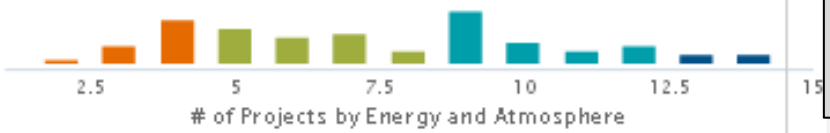
Energy and Atmosphere

POINTS 0 2 4 6 8 10 12 14 16

Good | Very Good | Excellent | Exceptional

Iowa — Min 2, 7, Max 14

75 total projects



1 project scored 2
12 projects scored 9
2 projects scored 14

United States — Min 1, 6, Max 17

The World — Min 1, 6, Max 17

LEED for New Construction v2.2

2006 → 0%-42% below 90.1-2004

2007 → 14%-42% below 90.1-2004

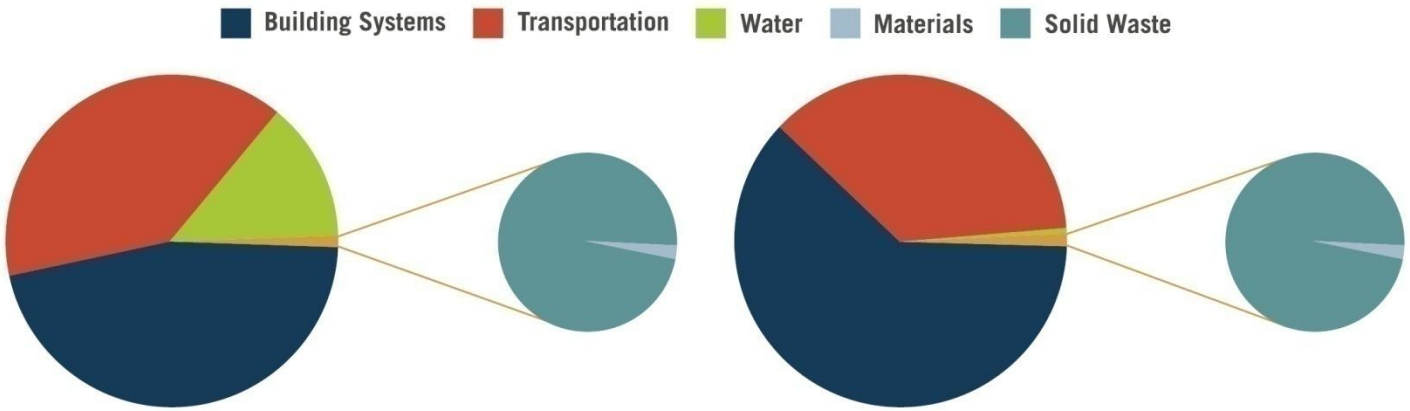
LEED Building Design & Construction v.2009

2009 → 10%-48% below 90.1-2007

LEED Building Design & Construction v4

2013 → 5%-50% below 90.1-2010

WEIGHTINGS TOOL



Credit		Description	Impact	Carbon Footprint		Fossil Fuel Depletion		Water Use		Land Use		Acidific
			Impact Categories									
			Impact Category Weighting Relative Importance [%] 2	25%		9%		7%		5%		3%
				Credit Weight, 0 = Nothing, 10 = Maximal Impact	Relative Impact [%]	Credit Weight (0-10)	Relative Impact [%]	Credit Weight (0-10)	Relative Impact [%]	Credit Weight (0-10)	Relative Impact [%]	Credit Weight (0-10)
Building systems					59%		46%		0%		0%	
				Base	59	Base	46	Base	0	Base	0	Base
				Net	73.89	Net	57.61	Net	0	Net	8E-04	Net
SS	7.1	Landscape and exterior design to reduce heat island, non-roof	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
SS	7.2	Landscape and exterior design to reduce heat island, roof	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
SS	8	Light pollution reduction	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
EA	1.1	Optimize Energy Performance 10.5%	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
EA	1.2	Optimize Energy Performance 14%	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
EA	1.3	Optimize Energy Performance 17.5%	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
EA	1.4	Optimize Energy Performance 21%	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
EA	1.5	Optimize Energy Performance 24.5%	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
EA	1.6	Optimize Energy Performance 28%	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1
EA	1.7	Optimize Energy Performance 31.5%	Reduce EUI	1	3.4	1	2.6	0	0.0	1	0.0	1

GBIG

All

EA

MR

IEQ

SS

WE

IO

Capitol Plaza I

1200 First Street NE
Washington, DC US

GBIG Profile

LEED-EB:OM v2009 Platinum certified
82 of 110 possible points.

Energy and Atmosphere

28/35
Total EA Points

Exceptional
Top 4% of all LEED EB 2009 projects.

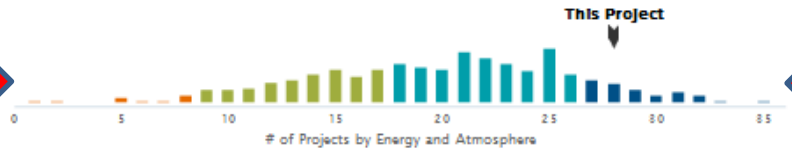
Top **6%**
of all projects in District of Columbia.

United States

Top **4%**
of all projects in United States.

Benchmark

Good | Very Good | Excellent | Exceptional



Credit Achievement

EAc1: Optimize energy efficiency performance
Excellent
Top **31%** of of all projects.

EAc2.1: Existing building commissioning,
Very Good
Top **58%** of of all projects.

EAc2.2: Existing building commissioning,
Excellent
Top **50%** of of all projects.

EAc2.3: Existing building commissioning, ongoing
Achieved by **20%** of all projects.

EAc3.1: Performance measurement, building
YES
Excellent
Top **37%** of all projects.

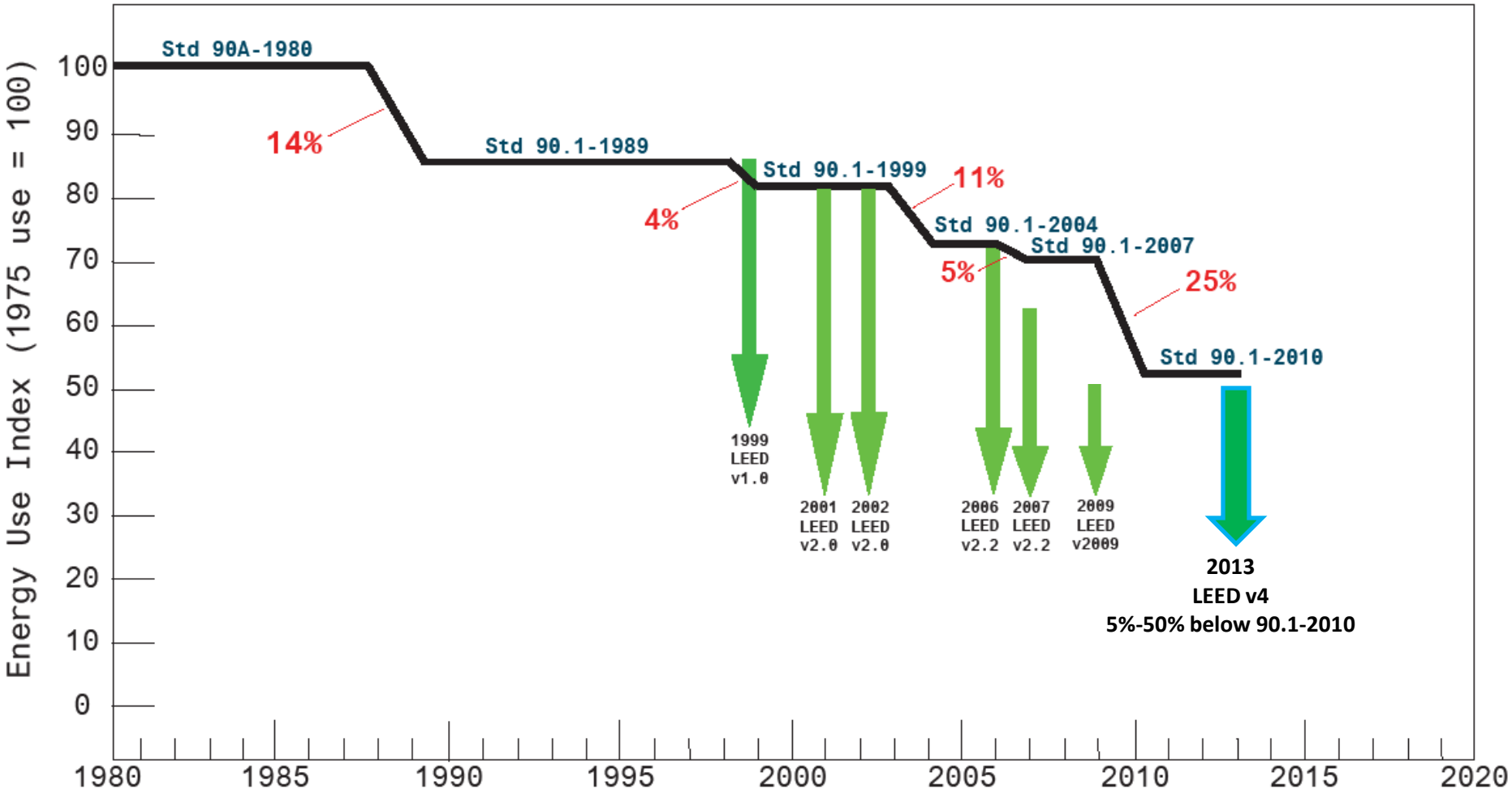
EAc3.2: Performance measurement, system-level
Achieved by **15%** of all projects.

EAc4: On-site and off-site renewable energy
Exceptional
Top **20%** of of all projects.

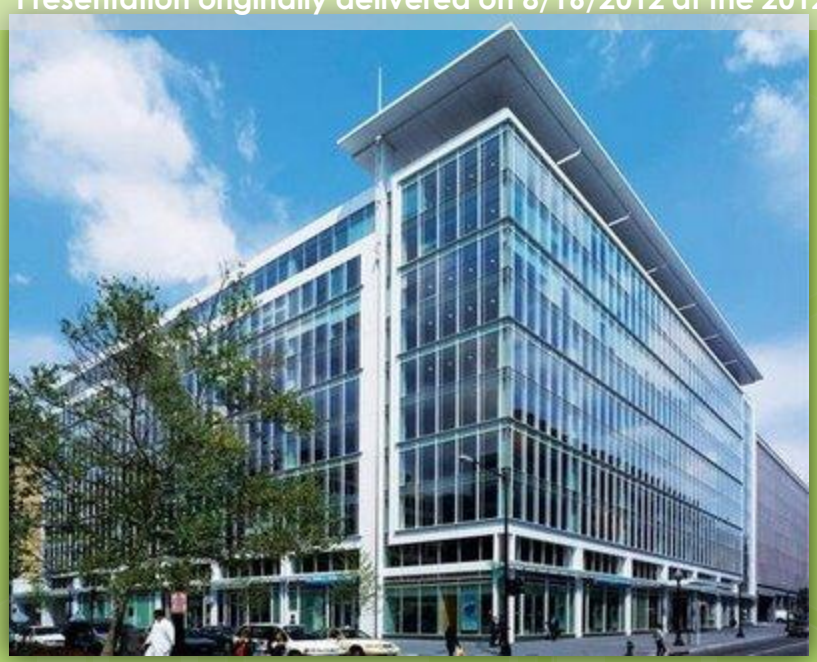
EAc5: Enhanced refrigerant management
YES
Excellent
Top **26%** of all projects.

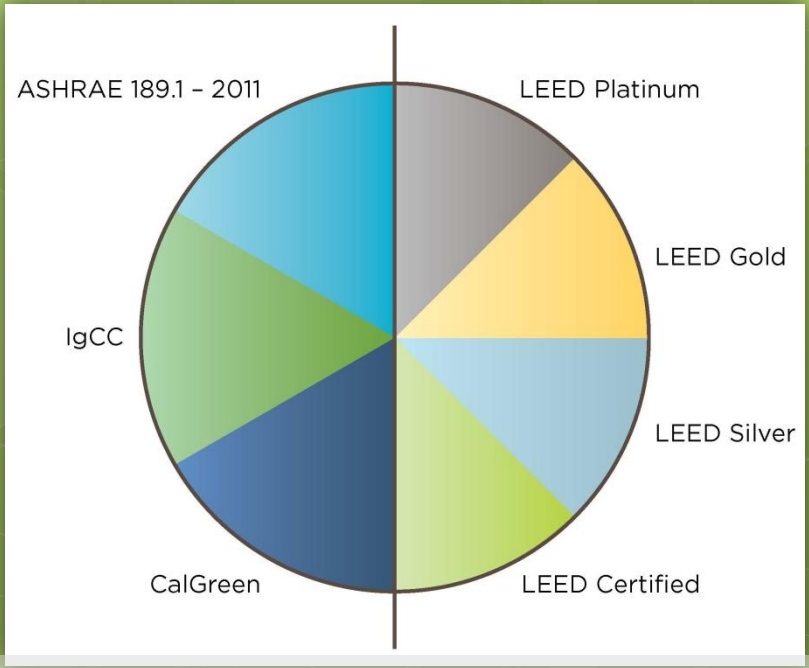
EAc6: Emissions reduction reporting
YES
Very Good
Top **71%** of all projects.

Commercial Energy Codes and LEED Energy Requirements



Presentation originally delivered on 8/16/2012 at the 2012 ACEEE Summer Study on Energy Efficiency in Buildings.





"Green" Codes and Rating Systems:

A Framework for Evaluating the Tools and the Measuring Sticks to Create Better Buildings

Lane Burt, USGBC
Charlie Haack, ICF International
Jeremy Sigmon, USGBC
Brian Dean, ICF International

U.S. Green Building Council, ICF International. "Green Codes and Rating Systems: A Framework for Evaluating the Tools and Measuring Sticks to Create Better Buildings." August 2012. Available At: http://www.aceee.org/files/proceedings/2012/data/papers/0193-000069.pdf

The Motivation

- The development of green building codes and beyond-code programs creates:
  - an effective way to drive **market transformation**
  - much-needed set of **regulatory tools** for states and localities
- However, these new green building codes have
  - caused **unintended market confusion**.
- As a result it was determined that:
  - a rational **framework for evaluation** would clarify this confusion and
  - such an evaluation framework would support the **appropriate roles** of these distinct and complementary policy tools.

The Framework

- "**apples to apples**" comparison of code provisions and the LEED rating system:
  - based on actual **minimum requirements** and typical LEED **credits earned**.
  - avoid comparisons with combined sustainability metrics that add **bias by over- or under-weighting** a category, like energy efficiency.
- demonstrate the effectiveness of **both green codes and green building rating systems** by:
  - documenting **how building to a code achieves the outcomes** that are evaluated, verified, and communicated **by green building rating systems**.

The Tool

- Both **flexible and expandable**, the tool is intended to:
  - **accommodate** new codes, updated rating systems, refined metrics and revised categorization
  - analyze and evaluate across two critical spectra – **Breadth and Depth**
  - **calibrate** each metric, requirement or credit through specific weightings
  - be useful as the starting point and foundation for **future code and rating system analyses**

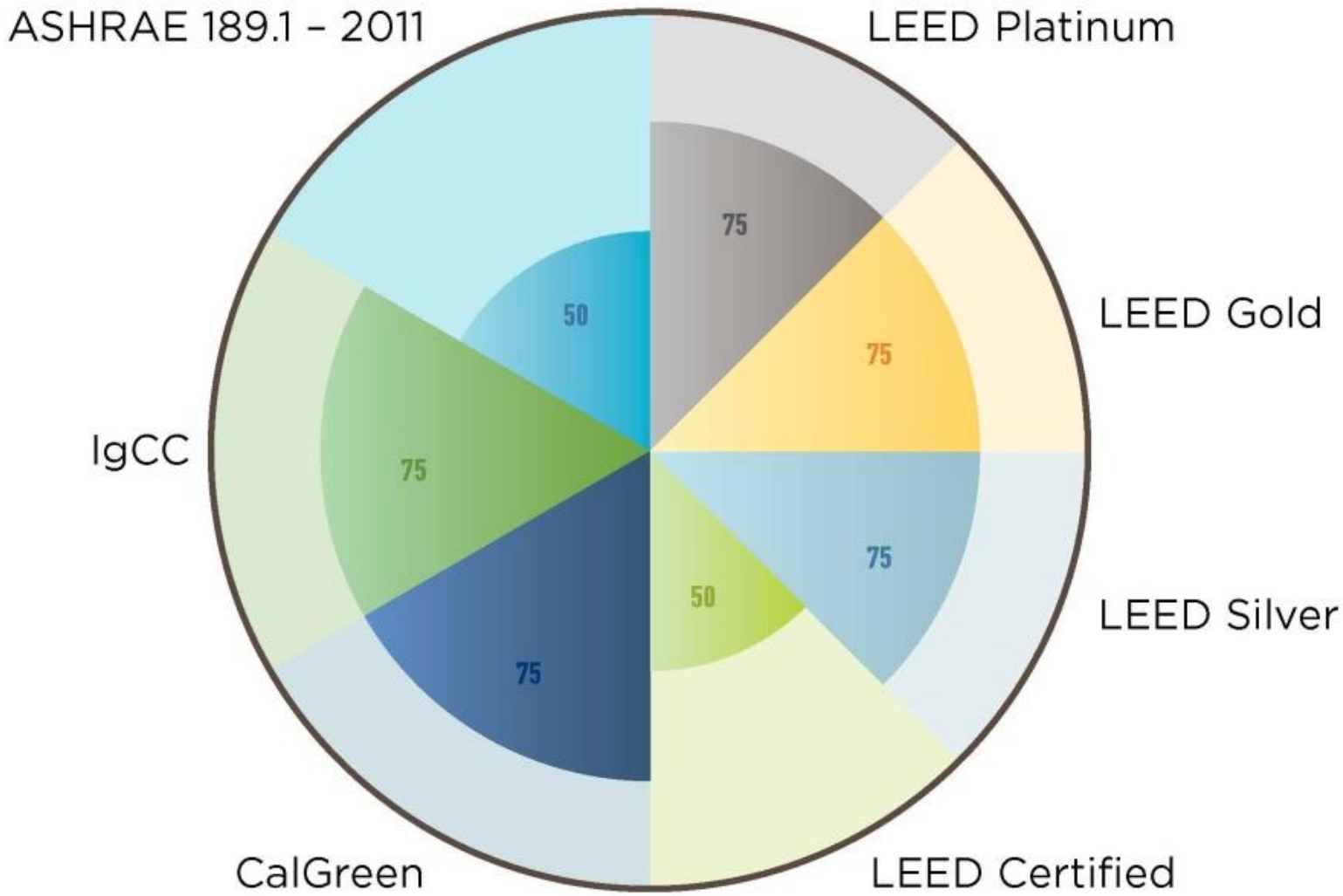
The Tool

- Breadth Analysis:
  - analysis and collation of **all metrics** across all documents at the highest level to determine binary, yes/no coverage (Energy and Atmosphere, Sustainable Sites, Materials and Resources, Water Efficiency, and Indoor Environmental Quality)
  - speaks to **scope and coverage** of the each of the codes and rating systems only
- Depth Analysis:
  - an **in-depth** look at a single metric, such as Energy.
  - to include **variation** in building type, location, etc.
  - **results** in site energy, source energy, and source emissions

Assumptions

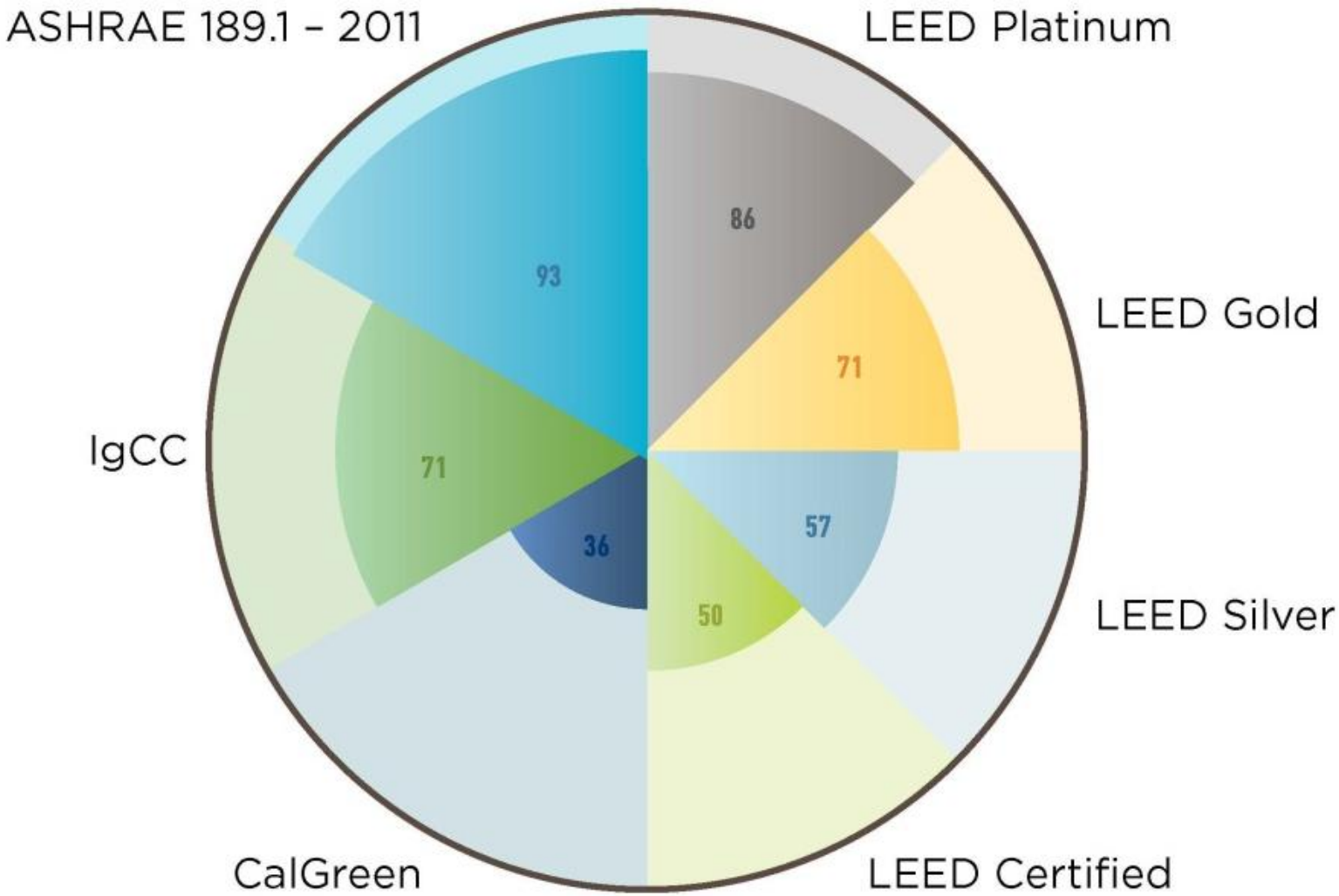
- That the **average credit attainment profile** of LEED Certified; LEED Silver; LEED Gold; LEED Platinum buildings is representative.
  - variability in LEED projects to stretch and reach beyond code is fixed to specific attainment of specific credits;
  - all certified buildings achieve the most commonly earned credits for their data set (Certified, Silver, Gold, Platinum) up to the average point threshold for that data set: Certified (44.1), Silver (52.8), Gold (64.4) and Platinum (84);
- That **code compliance = 100%**
  - all compliant buildings are minimally code compliant;
  - verification infrastructure is sufficient and effective;
  - education and training to support code officials and code users is sufficient and effective;

Breadth: Water Efficiency



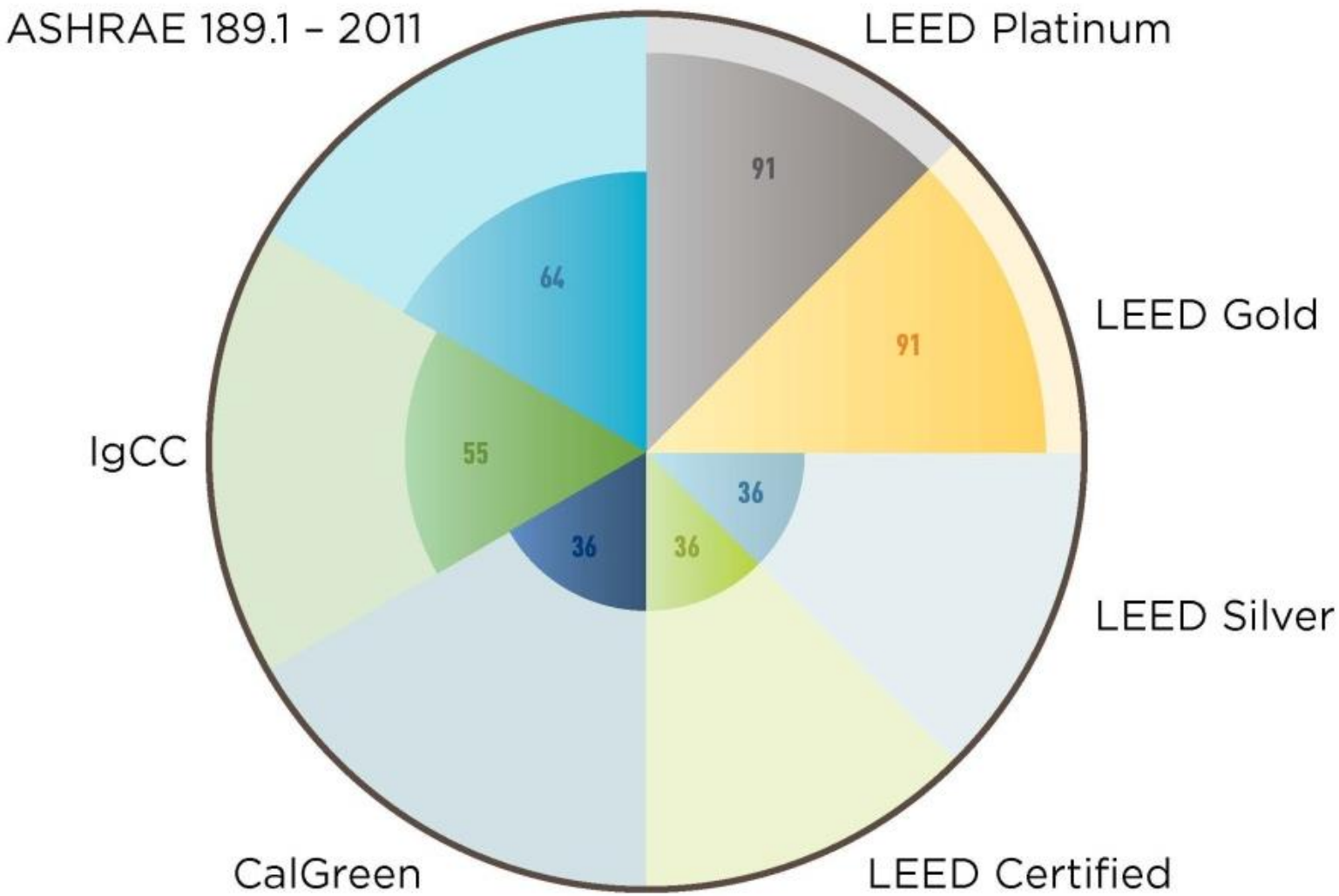
Note: Breadth analysis assesses coverage of green building impact areas on a binary basis, and does not evaluate the relative effectiveness or stringency of the provisions. Once similarly-intended provisions or credits are grouped a "Depth Analysis" evaluates effectiveness and stringency against a common metric.

Breadth: Sustainable Sites



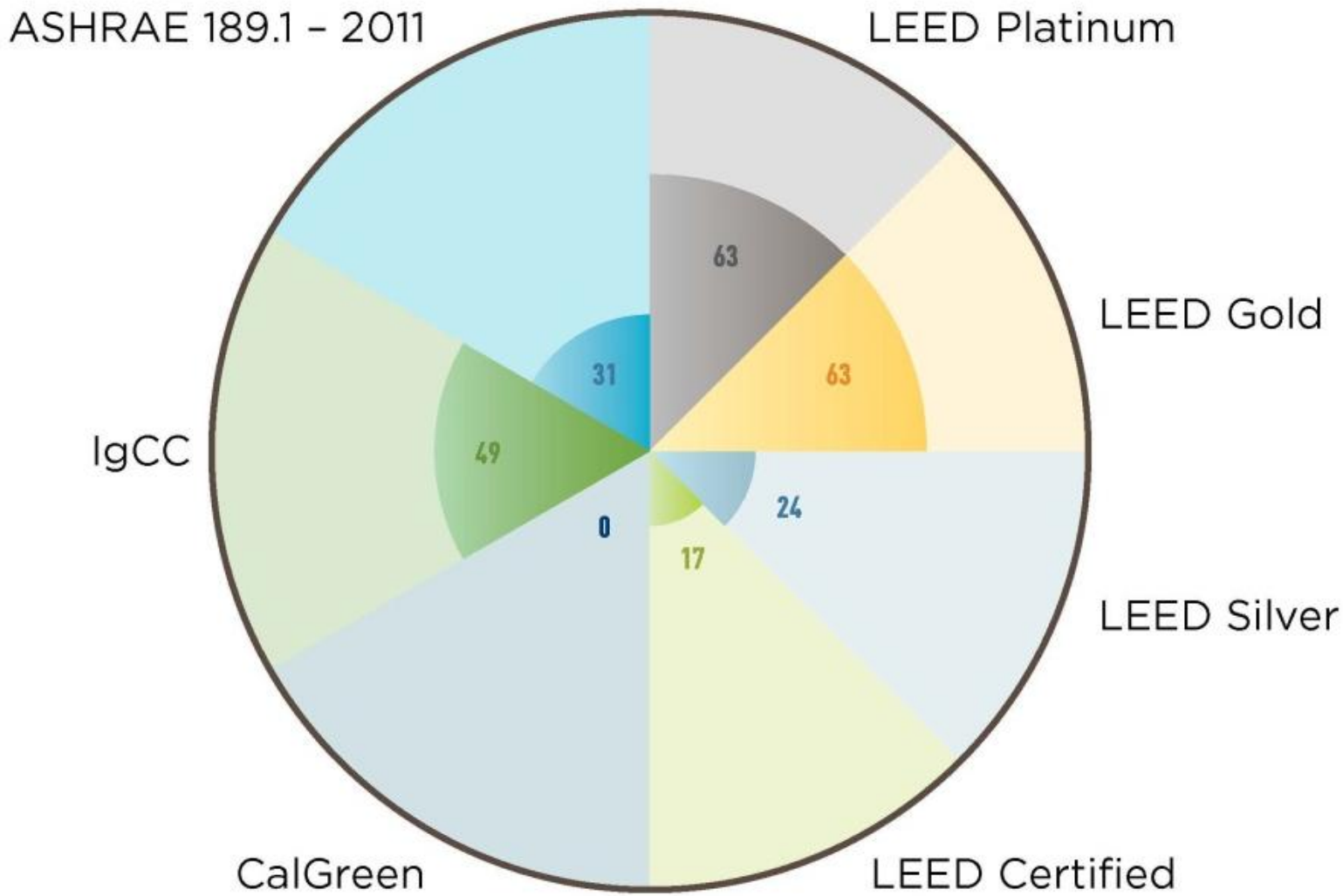
Note: Breadth analysis assesses coverage of green building impact areas on a binary basis, and does not evaluate the relative effectiveness or stringency of the provisions. Once similarly-intended provisions or credits are grouped a "Depth Analysis" evaluates effectiveness and stringency against a common metric.

Breadth: Indoor Environment Quality



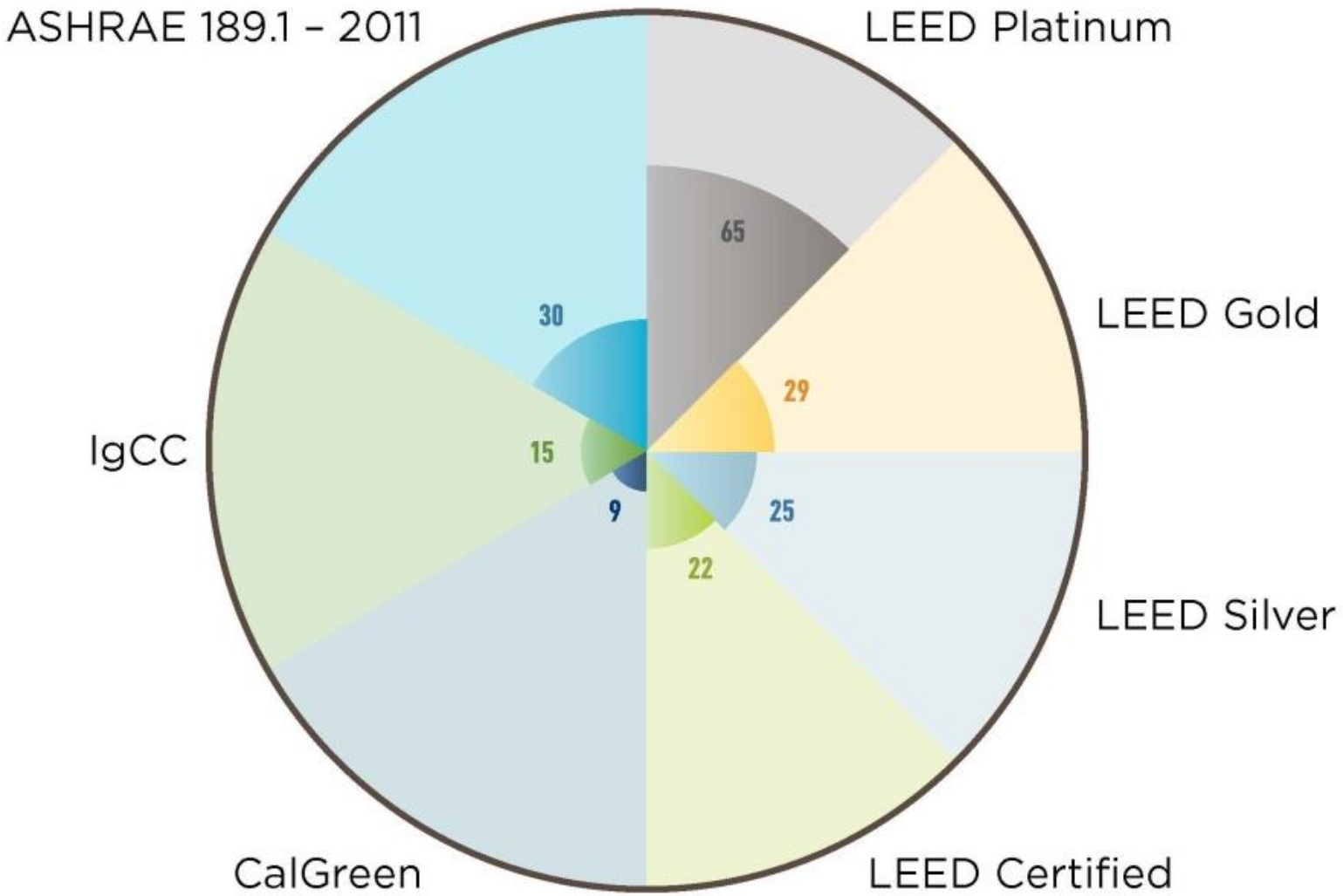
Note: Breadth analysis assesses coverage of green building impact areas on a binary basis, and does not evaluate the relative effectiveness or stringency of the provisions. Once similarly-intended provisions or credits are grouped a "Depth Analysis" evaluates effectiveness and stringency against a common metric.

Breadth: Materials & Resources



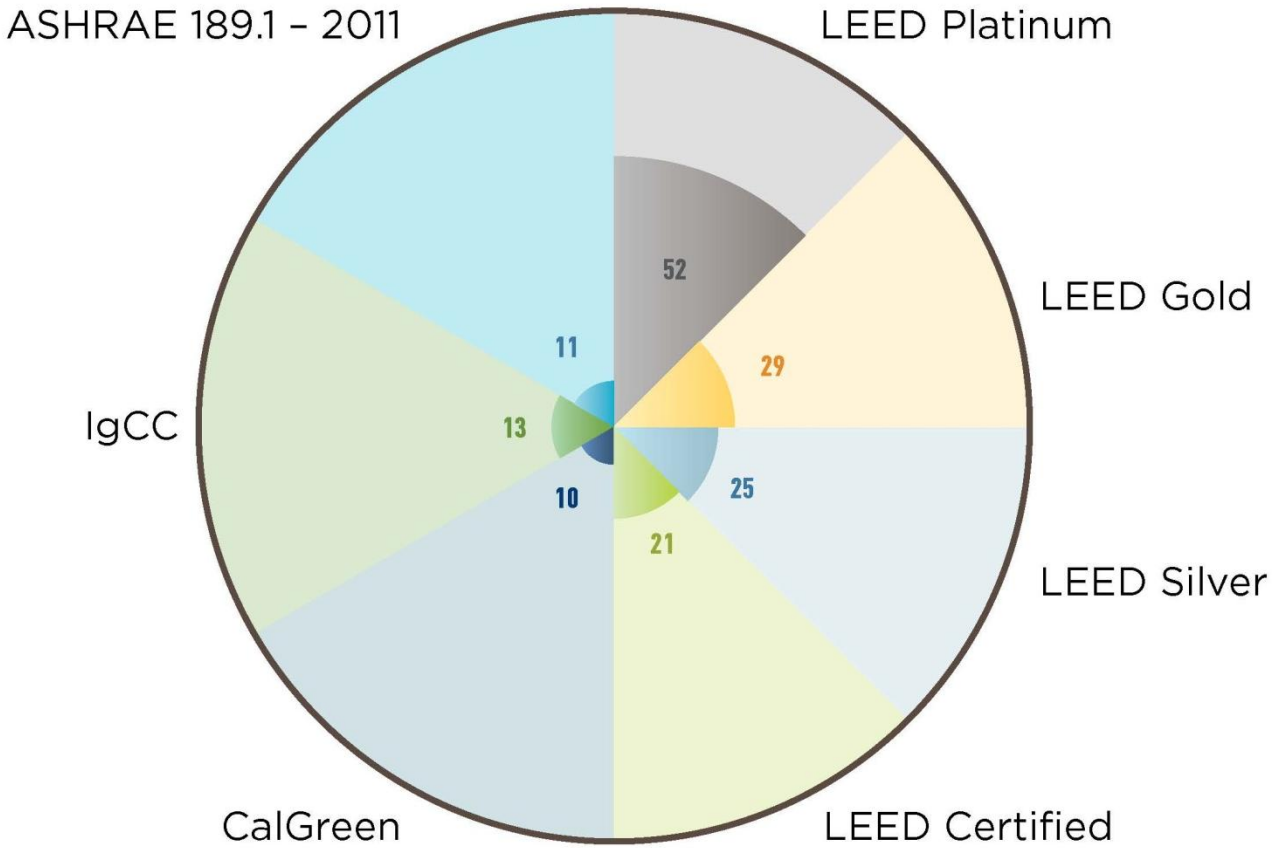
Note: Breadth analysis assesses coverage of green building impact areas on a binary basis, and does not evaluate the relative effectiveness or stringency of the provisions. Once similarly-intended provisions or credits are grouped a "Depth Analysis" evaluates effectiveness and stringency against a common metric.

Breadth: Energy and Atmosphere



Note: Breadth analysis assesses coverage of green building impact areas on a binary basis, and does not evaluate the relative effectiveness or stringency of the provisions. Once similarly-intended provisions or credits are grouped a "Depth Analysis" evaluates effectiveness and stringency against a common metric.

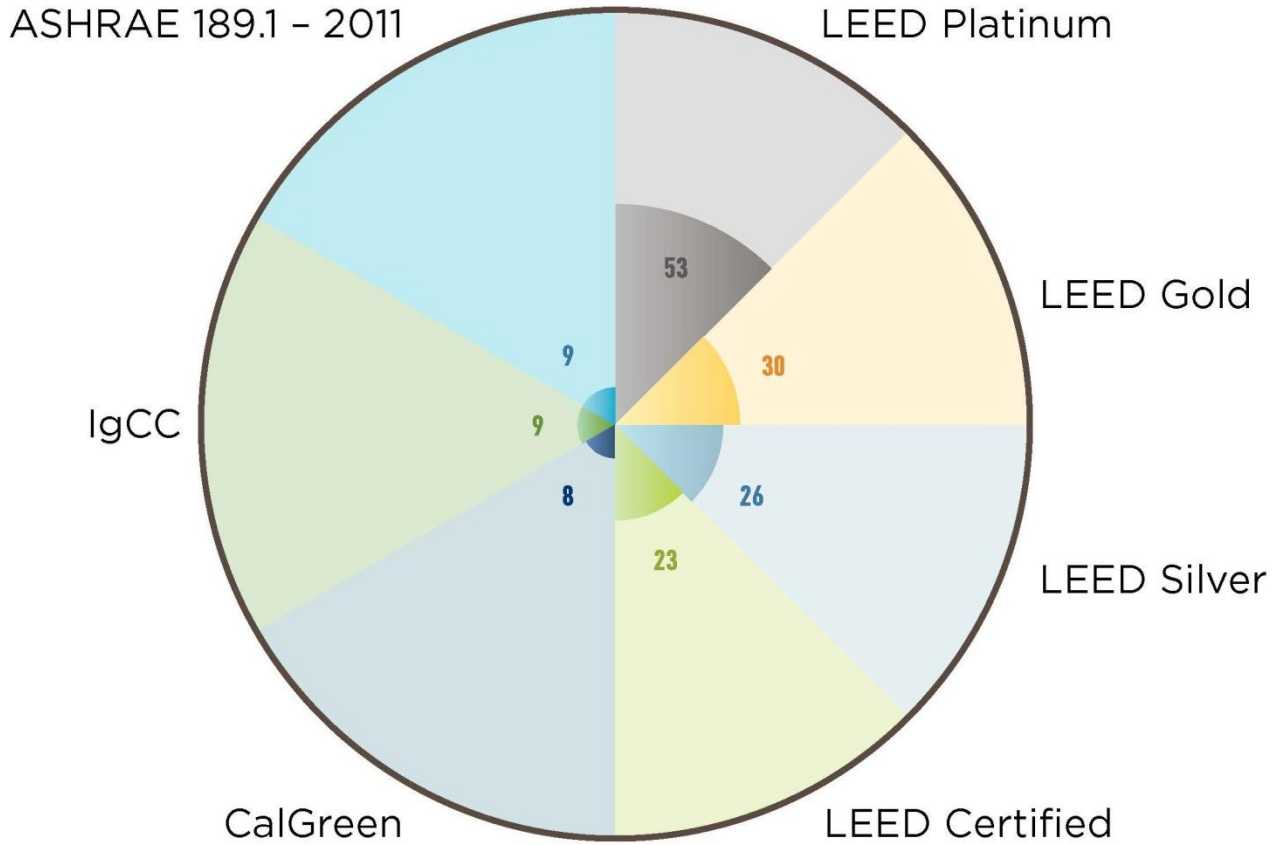
Depth: Energy and Atmosphere



ENERGY & ATMOSPHERE DEPTH

SITE ENERGY

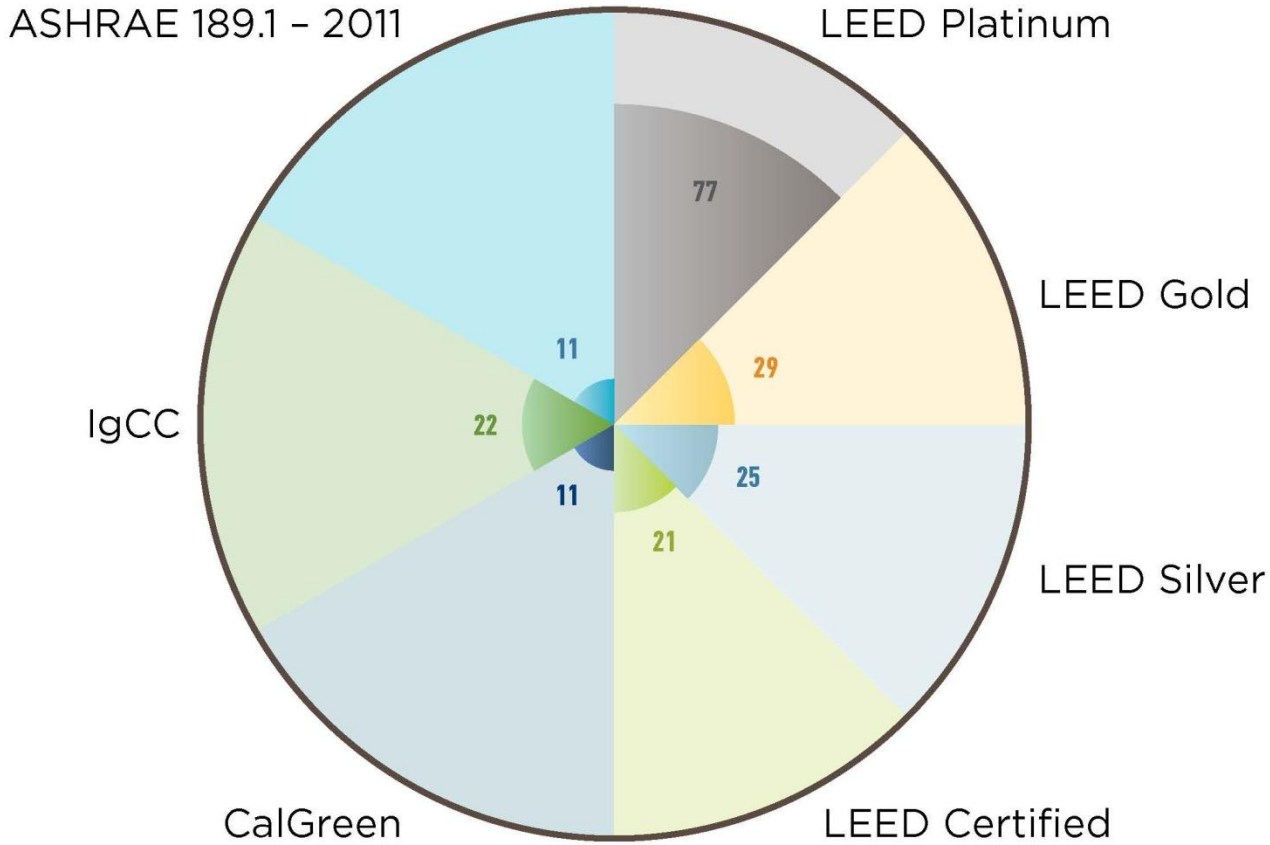
Depth: Energy and Atmosphere



ENERGY & ATMOSPHERE DEPTH

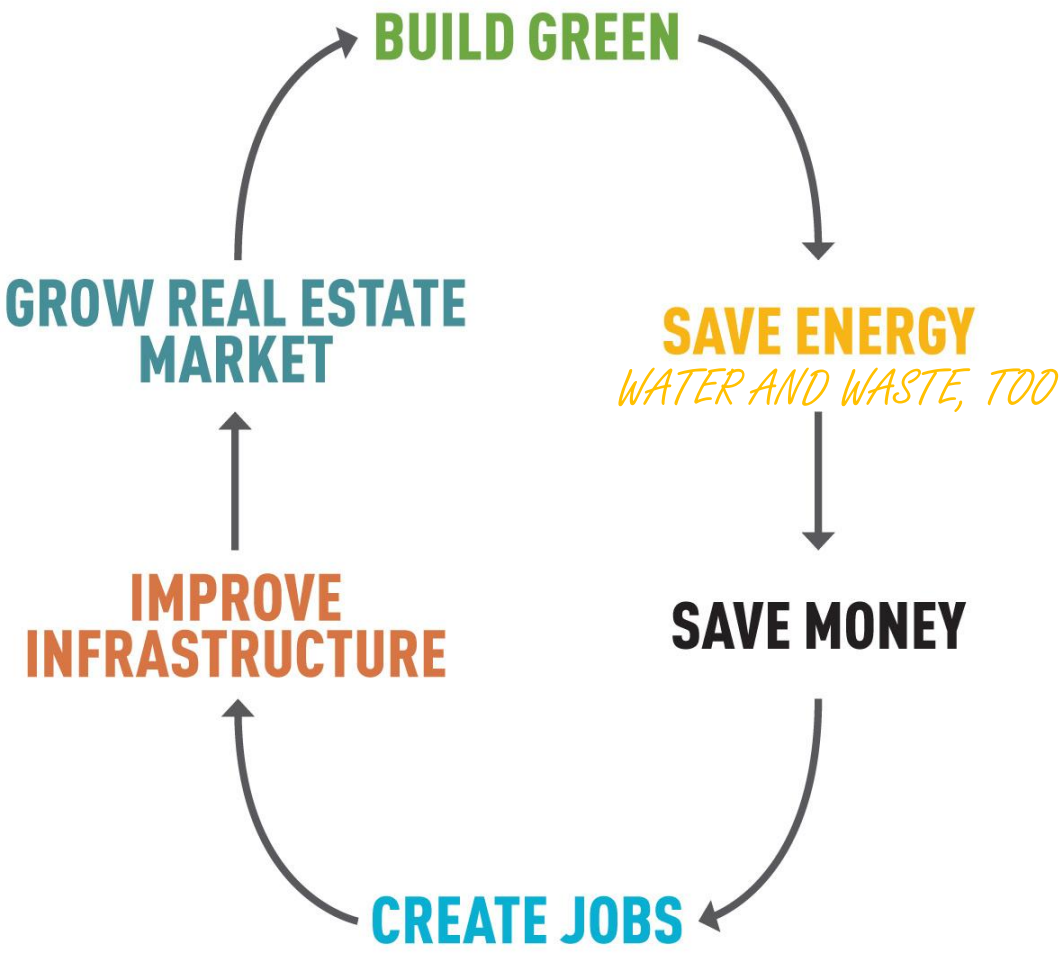
SOURCE ENERGY

Depth: Energy and Atmosphere

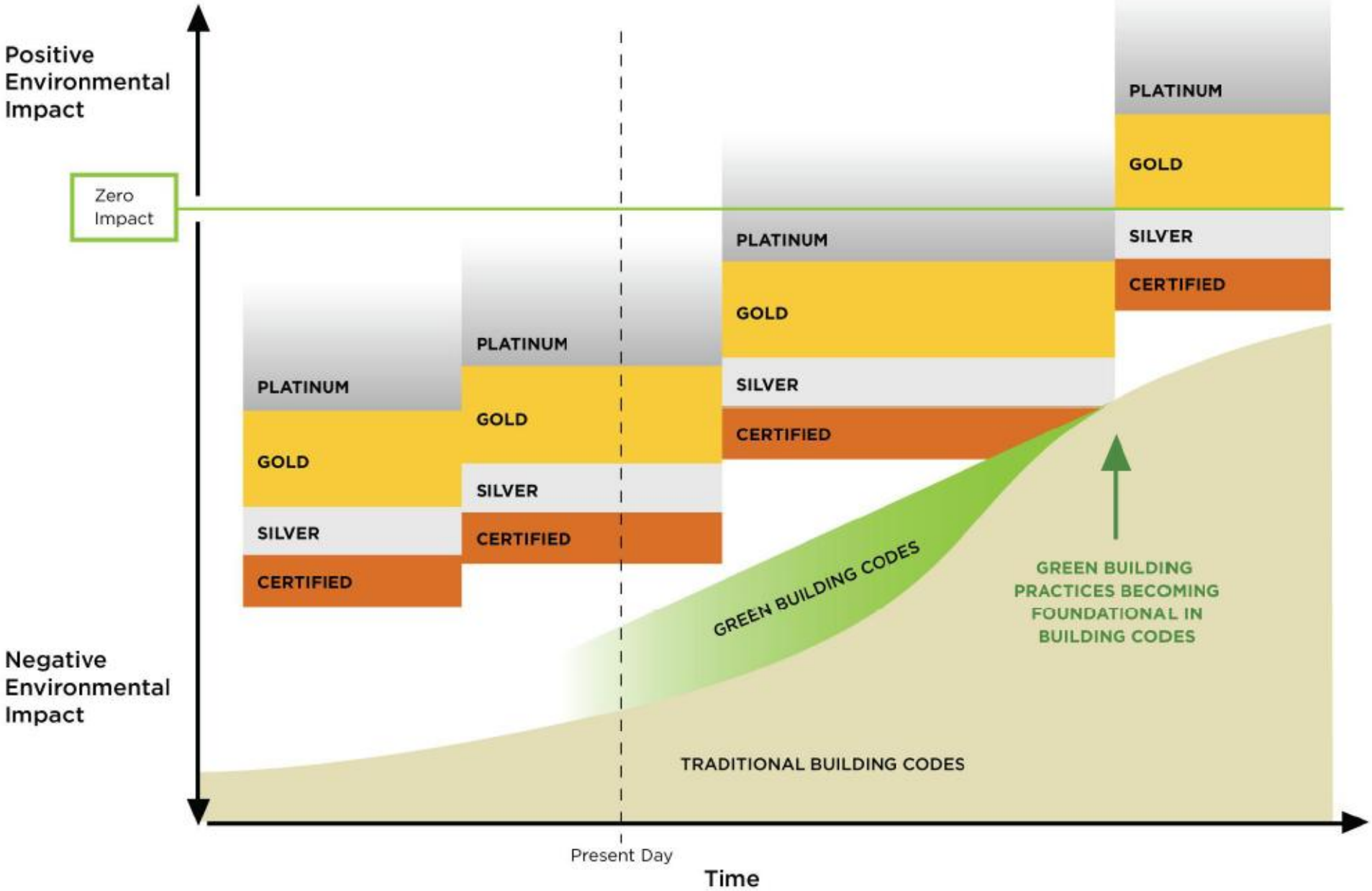


ENERGY & ATMOSPHERE DEPTH

SOURCE EMISSIONS


BUILD GREEN
SAVE ENERGY
WATER AND WASTE, TOO
SAVE MONEY
CREATE JOBS
IMPROVE INFRASTRUCTURE
GROW REAL ESTATE MARKET

A long road ahead…



For You, Your Home and Business

- Consider how the International Green Construction Code can enhance your state or community's building regulations -- www.iccsafe.org/IgCC
- Tap your local USGBC chapter - www.usgbc.org/chapters
- Review and comment on LEED v4 (10/2-12/10) -- www.usgbc.org/LEEDv4
- Learn what you can do at home at the Green Home Guide -- www.greenhomeguide.com
- See you at Greenbuild (11/14-16) and the Codes Summit (11/13) -- www.greenbuildexpo.org