



**Biophilic Design in
Fitwel, the WELL Building Standard,
& the Living Building Challenge**

Presented by _____,
GPGB Registered Trainer

BUILDING WELLNESS INTO BUILDINGS



**GREEN PLANTS
for GREEN BUILDINGS**

**Communicating the aesthetic, wellbeing and economic
benefits of nature in the build environment.**

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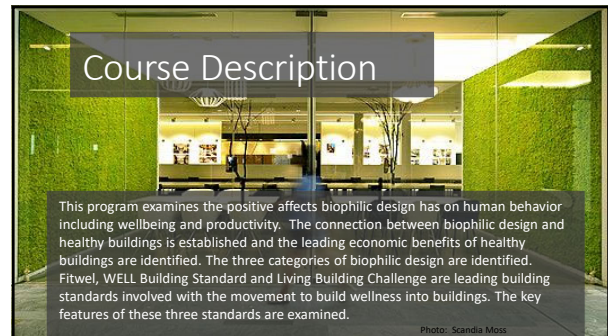
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This biophilic design information in this
presentation is based on Terrapin Bright
Green's *The Economics of Biophilia*.
Research citations and calculations
mentioned in this presentation appear on
pages 29 – 39 of their publication.

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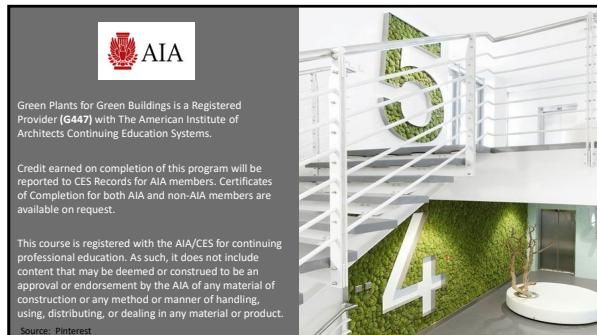
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Course Description

This program examines the positive affects biophilic design has on human behavior including wellbeing and productivity. The connection between biophilic design and healthy buildings is established and the leading economic benefits of healthy buildings are identified. The three categories of biophilic design are identified. Fitwel, WELL Building Standard and Living Building Challenge are leading building standards involved with the movement to build wellness into buildings. The key features of these three standards are examined.

Photo: Scandia Moss



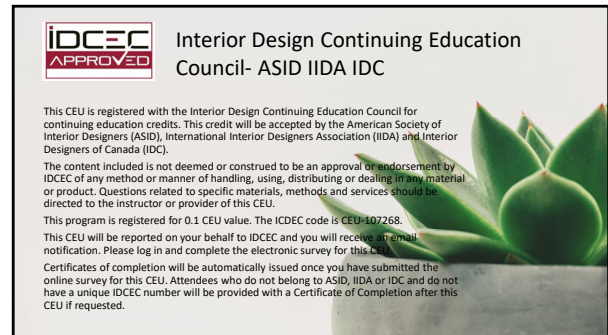
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Source: Pinterest



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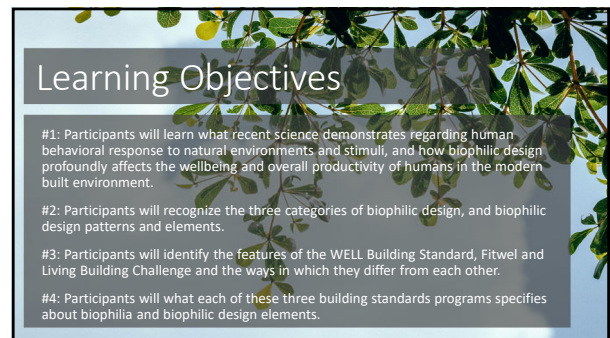
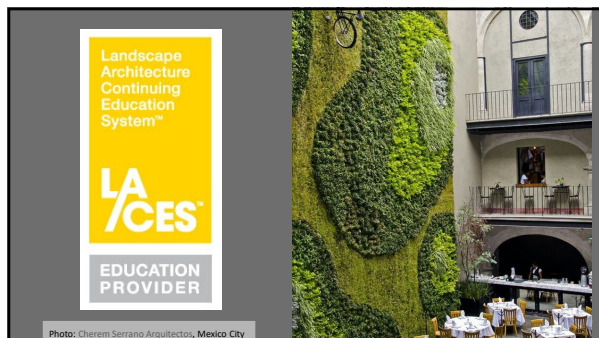
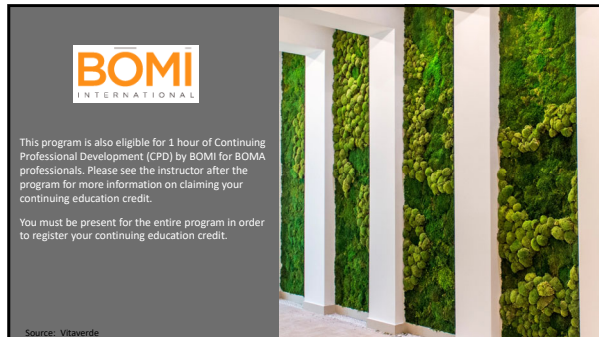
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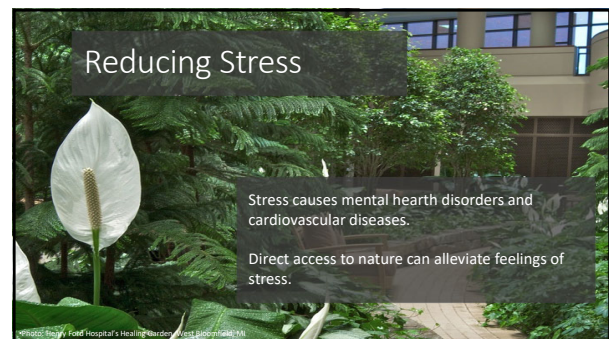
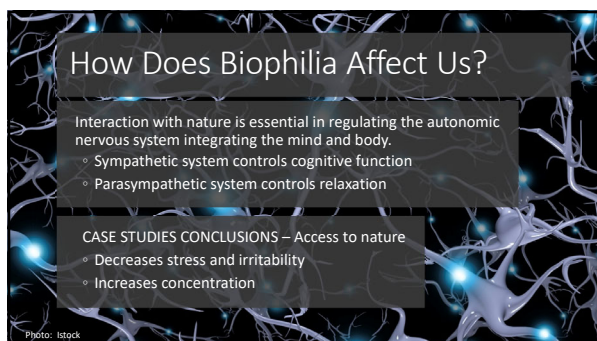
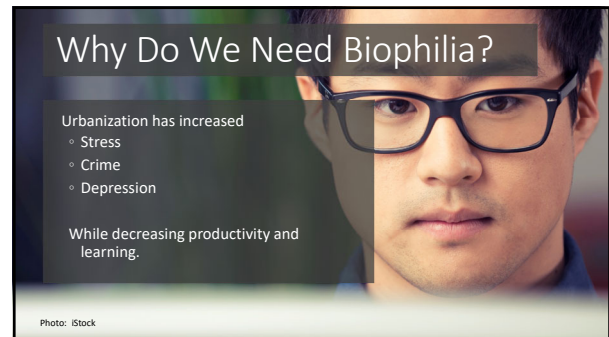
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Daylight



- Maintains
 - Circadian rhythms
 - Hormone and neurotransmitter production
 - Mood
 - Immune system health
- Disrupts
 - Cancer
 - Diabetes
 - Low mood

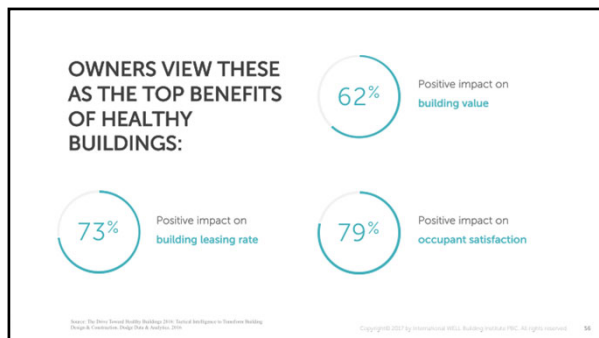
Photo: iStock

Why Bother?



HERE'S ONE REASON:

- 90% is spent in salary and benefits
- 9% is spent in rent & operations
- 1% is spent in energy costs



What Does Biophilic Design Look Like?



Biophilic Design



Restores natural stimuli to the built environment.
Enhances physiological, cognitive and psychological functions.

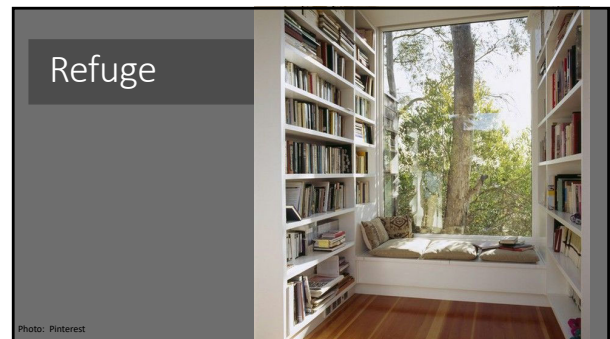
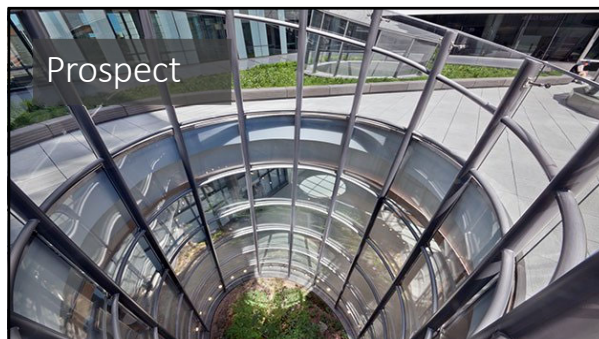
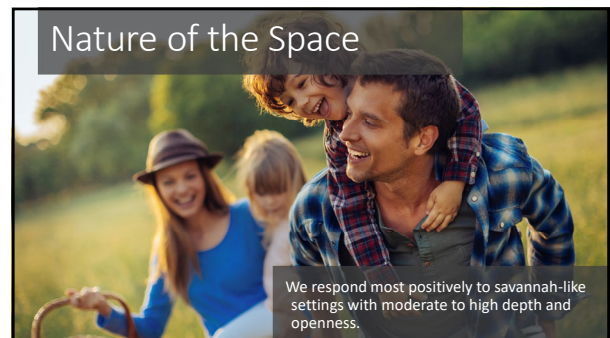
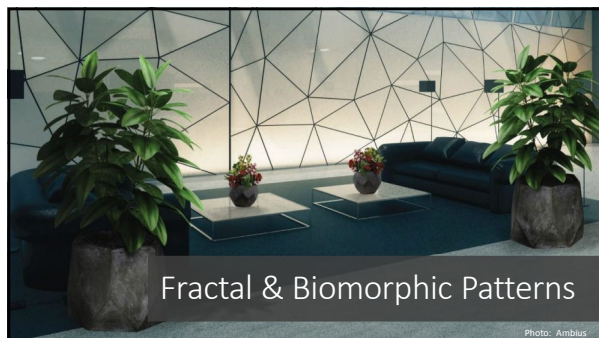
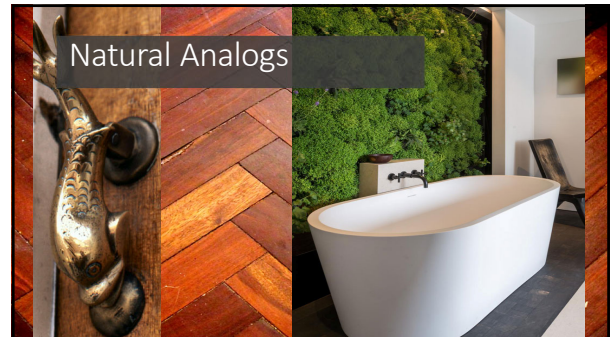
Photo: Miles Lewis, Folios Design Systems, Orlando, FL

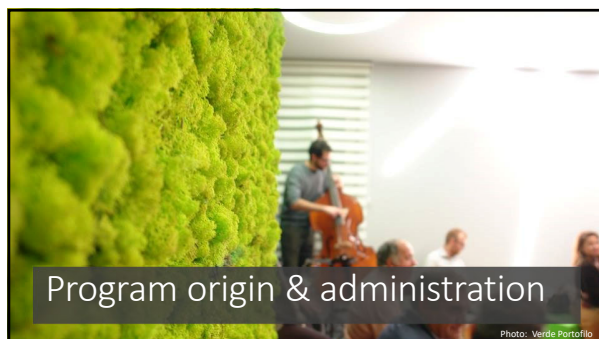
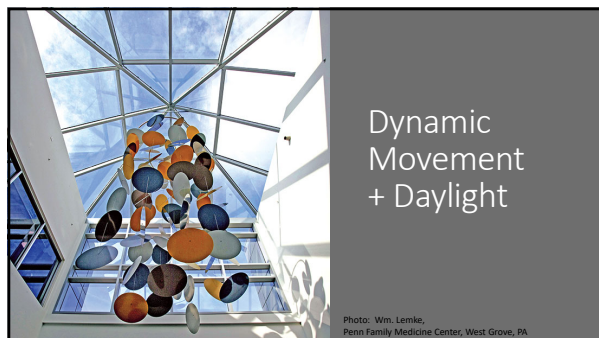
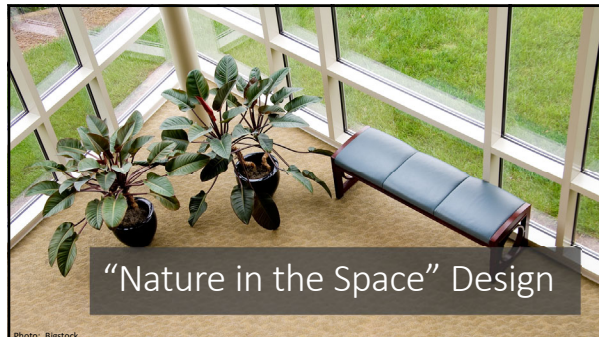
Categorizing Biophilic Design



Nature in the Space - Natural Analogues - Nature of the Space

Photo: R. B. Smith





7 Health Impact Categories

- Impacts Community Health
- Reduces Morbidity + Absenteeism
- Supports Social Equity for Vulnerable Populations
- Instills Feelings of Well-being - Increases Physical Activity
- Promotes Occupant Safety - Provides Healthy Food Options

Photo: Annie Spratt, Unsplash

Strategies

Linked by scientific evidence to at least one of the seven Fitwel Health Impact Categories.

- Building Access – Outdoor Spaces – Entrances & Ground Floor – Indoor Environment – Vending Machines & Snack Bars – Workspaces – Water Supply – Stairwells – Cafeterias & Retail Prepared Food Areas – Emergency Procedures

Photo: Integral Group

The Scorecard

Photo: Integral Group, Fitwel Certified

The Star Rating

IMPACT OF BIOPHILIC DESIGN

Strategies with stronger, multi-faceted impacts receive more points.

Photo: Pinterest – Dries Van Noten

What makes Fitwel different?

NO PREREQUIRETE FEATURES

A credit system places the highest value on the building features that are most effective in accomplishing wellbeing results.

Photo: Big Stock

Where does biophilia fit in?

WORKPLACE SCORECARD
“Outdoor Spaces” and “Workplaces”

MULTIFAMILY RESIDENTIAL SCORECARD
“Outdoor Spaces”, “Dwellings”, and “Shared Spaces”

Feature	Max	Min	Score
1.1. Access to outdoor spaces (e.g., rooftop gardens, courtyards, etc.)	100	0	
1.2. Access to green spaces (e.g., parks, gardens, etc.)	100	0	
1.3. Access to water features (e.g., fountains, ponds, etc.)	100	0	
1.4. Access to natural light	100	0	
1.5. Access to natural ventilation	100	0	
1.6. Access to natural materials (e.g., wood, stone, etc.)	100	0	
1.7. Access to natural sounds (e.g., birds, water, etc.)	100	0	
1.8. Access to natural smells (e.g., flowers, etc.)	100	0	
1.9. Access to natural views (e.g., nature, etc.)	100	0	
1.10. Access to natural textures (e.g., wood, stone, etc.)	100	0	
1.11. Access to natural colors (e.g., green, brown, etc.)	100	0	
1.12. Access to natural patterns (e.g., stripes, etc.)	100	0	
1.13. Access to natural shapes (e.g., circles, etc.)	100	0	
1.14. Access to natural sizes (e.g., large, etc.)	100	0	
1.15. Access to natural weights (e.g., heavy, etc.)	100	0	
1.16. Access to natural temperatures (e.g., warm, etc.)	100	0	
1.17. Access to natural humidity (e.g., dry, etc.)	100	0	
1.18. Access to natural air quality (e.g., clean, etc.)	100	0	
1.19. Access to natural sound quality (e.g., quiet, etc.)	100	0	
1.20. Access to natural light quality (e.g., bright, etc.)	100	0	
1.21. Access to natural ventilation quality (e.g., fresh, etc.)	100	0	
1.22. Access to natural materials quality (e.g., high quality, etc.)	100	0	
1.23. Access to natural sounds quality (e.g., pleasant, etc.)	100	0	
1.24. Access to natural smells quality (e.g., pleasant, etc.)	100	0	
1.25. Access to natural views quality (e.g., beautiful, etc.)	100	0	
1.26. Access to natural textures quality (e.g., smooth, etc.)	100	0	
1.27. Access to natural colors quality (e.g., vibrant, etc.)	100	0	
1.28. Access to natural patterns quality (e.g., interesting, etc.)	100	0	
1.29. Access to natural shapes quality (e.g., unique, etc.)	100	0	
1.30. Access to natural sizes quality (e.g., appropriate, etc.)	100	0	
1.31. Access to natural weights quality (e.g., balanced, etc.)	100	0	
1.32. Access to natural temperatures quality (e.g., comfortable, etc.)	100	0	
1.33. Access to natural humidity quality (e.g., comfortable, etc.)	100	0	
1.34. Access to natural air quality quality (e.g., healthy, etc.)	100	0	
1.35. Access to natural sound quality quality (e.g., soothing, etc.)	100	0	
1.36. Access to natural light quality quality (e.g., calming, etc.)	100	0	
1.37. Access to natural ventilation quality quality (e.g., refreshing, etc.)	100	0	
1.38. Access to natural materials quality quality (e.g., durable, etc.)	100	0	
1.39. Access to natural sounds quality quality (e.g., relaxing, etc.)	100	0	
1.40. Access to natural smells quality quality (e.g., invigorating, etc.)	100	0	
1.41. Access to natural views quality quality (e.g., inspiring, etc.)	100	0	
1.42. Access to natural textures quality quality (e.g., tactile, etc.)	100	0	
1.43. Access to natural colors quality quality (e.g., harmonious, etc.)	100	0	
1.44. Access to natural patterns quality quality (e.g., cohesive, etc.)	100	0	
1.45. Access to natural shapes quality quality (e.g., functional, etc.)	100	0	
1.46. Access to natural sizes quality quality (e.g., proportional, etc.)	100	0	
1.47. Access to natural weights quality quality (e.g., stable, etc.)	100	0	
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1.84. Access to natural light quality quality quality (e.g., bright, etc.)	100	0	
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1.86. Access to natural materials quality quality quality (e.g., high quality, etc.)	100	0	
1.87. Access to natural sounds quality quality quality (e.g., pleasant, etc.)	100	0	
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1.99. Access to natural sound quality quality quality (e.g., soothing, etc.)	100	0	
1.100. Access to natural light quality quality quality (e.g., calming, etc.)	100	0	

Photo: Integral Group

What is the journey to becoming Fitwel Certified?

- Building Registration
- Complete the Scorecard
- Upload project documentation
- Project is reviewed and given a Fitwel Star rating if earned.

Photo: Integral Group, Fitwel Certified

What does Fitwel Certification cost?

- Registration Fee: \$500
- Certification Fee: \$6000
- Recertification: \$500 + 89% of prevailing certification rate.
- For 6 or more projects, reduced rates may be available.

Photo: Bloomberg Headquarters NYC, 3 Star Fitwel Certification



WELL v2™
The next version of the WELL Building Standard™

“Wellness is the next trillion dollar industry”

McKinsey & Company

Program origin & administration

Photo: ASID HQ in Washington, DC.

3 Project Types

- New & Existing Buildings
- New & Existing Interiors
- Core & Shell Developments

Photo: Istock

AIR WATER NOURISHMENT LIGHT MOVEMENT

THERMAL COMFORT SOUND MATERIALS MIND COMMUNITY

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10 Wellness Categories aka Concepts

112 Features

BIOPHILIC DESIGN

Features correlate to one of the 14 Patterns of Biophilic Design.

Two types of Features:
Preconditions (required)
Optimizations (recommended)

WELL BUILDING STANDARD® FEATURES MATRIX

This table shows which Features are Preconditions and Optimizations for the different project types of the standard for commercial and institutional offices. Refer to the tables in the beginning of each concept for details about the applicability of specific parts.

	Core and Shell	New and Existing Interiors	New and Existing Buildings
1. Air quality standards			
2. Acoustics			
3. Daylight			
4. Thermal environment			
5. Water and air circulation			
6. Health and safety			
7. Human resources			
8. Productivity			
9. Health and safety			
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112. Health and safety			

Benefits to Body Systems

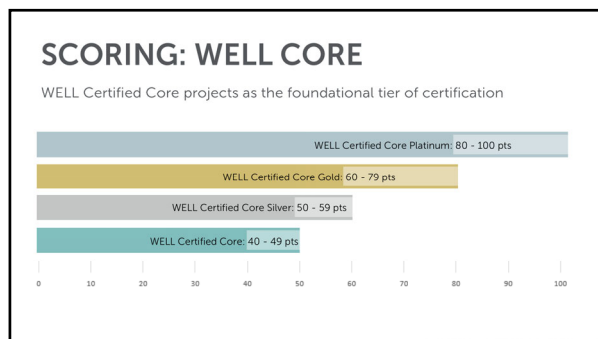
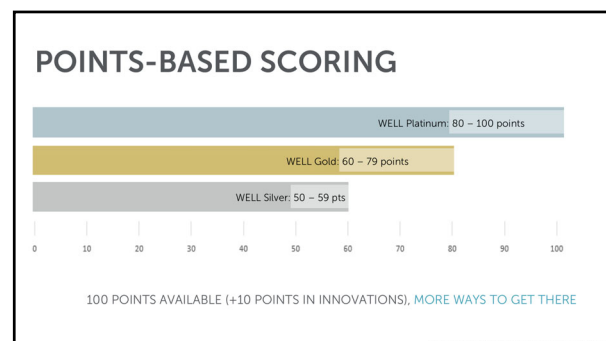
Cardiovascular
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Endocrine
Immune
Integumentary
Muscular
Nervous
Reproductive
Respiratory
Skeletal
Urinary

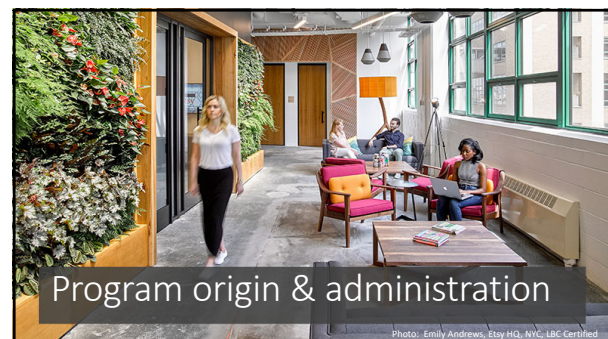
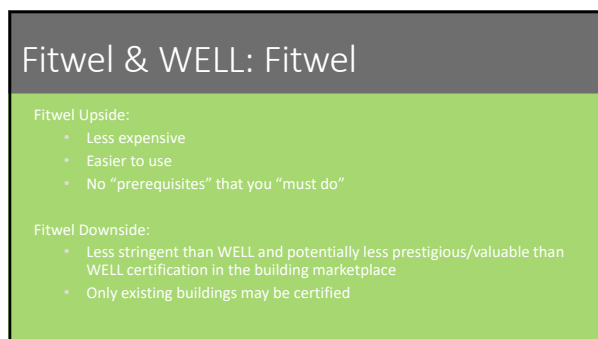
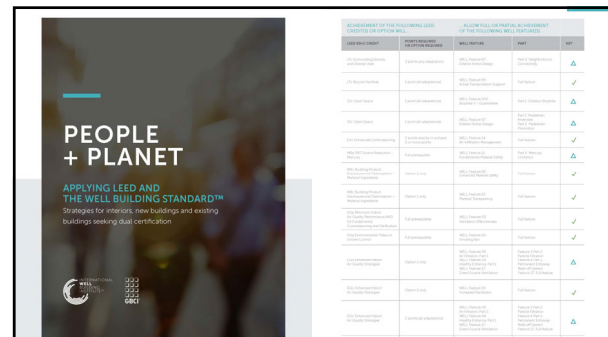
Photo: Rawpixel

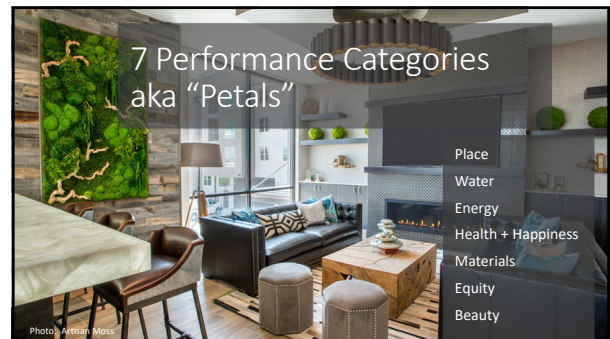
WELL® Features

WELL® Features	Parallel Patterns of Biophilic Design
54 Circadian Light Design	[P2] Dynamic & Diffuse Light
76 Thermal Comfort	[P4] Thermal & Airflow Variability
79 Sound Masking	[P2] Non-Visual Connection with Nature [P5] Presence of Water
82 Individual Thermal Control	[P4] Thermal & Airflow Variability
83 Radiant Thermal Comfort	[P4] Thermal & Airflow Variability
88 Biophilia I – Qualitative	[P1] Visual Connection with Nature [P5] Presence of Water [P6] Dynamic & Diffuse Light [P7] Connection with Natural Systems [P8] Biomorphic Forms & Patterns [P9] Material Connection with Nature [P11] Prospect [P12] Refuge [P13] Mystery [P14] Risky/Peril
89 Adaptable Spaces	[P2] Non-Visual Connection with Nature [P12] Refuge
99 Beauty & Design II	[P1] Visual Connection with Nature [P6] Dynamic & Diffuse Light [P8] Biomorphic Forms & Patterns [P10] Complexity & Order [P11] Prospect [P13] Mystery
100 Biophilia II – Quantitative	[P1] Visual Connection with Nature [P5] Presence of Water [P7] Connection with Natural Systems

Biophilic design is specified in the WELL Standard's MIND concept.



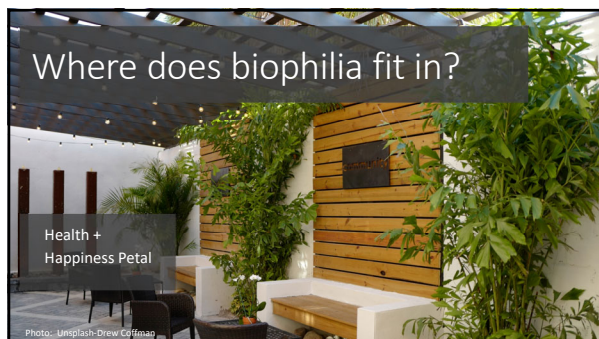
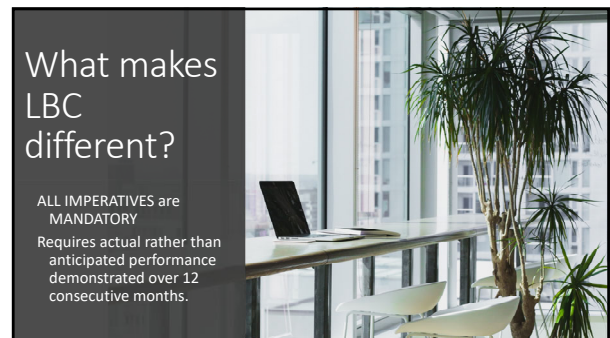




Imperatives are required for certification.

SUMMARY MATRIX
The 20 Imperatives of the Living Building Challenge: Follow down the column associated with each Typology to see which Imperatives apply.


	LIVING BUILDING CHALLENGE 3.1			IMPERATIVE LIST
	BUILDINGS	RENOVATIONS	LANDSCAPE + INFRASTRUCTURE	
PLACE	SCALE JUMPING	SCALE JUMPING	SCALE JUMPING	01. LIMITS TO GROWTH 02. URBAN AGRICULTURE 03. HABITAT EXCHANGE 04. HUMAN-POWERED LIVING 05. NET POSITIVE WATER 06. NET POSITIVE ENERGY 07. CIVILIZED ENVIRONMENT 08. HEALTHY INTERIOR ENVIRONMENT 09. BIOPHILIC ENVIRONMENT 10. RED LIST
WATER	SCALE JUMPING	SCALE JUMPING	SCALE JUMPING	11. SUSTAINED CARBON FOOTPRINT 12. RESPONSIBLE INDUSTRY 13. LIVING ECONOMY SOURCES 14. NET POSITIVE WASTE 15. HUMAN SCALE + HUMANE PLACES 16. UNIVERSAL ACCESS TO NATURE + PLACE 17. SUSTAINABLE INVESTMENT 18. JUST ORGANIZATIONS 19. BEAUTY + SPIRIT 20. INNOVATION + EDUCATION
ENERGY	SCALE JUMPING	SCALE JUMPING	SCALE JUMPING	
HEALTH + HAPPINESS	SCALE JUMPING	SCALE JUMPING	SCALE JUMPING	
MATERIALS	SCALE JUMPING	SCALE JUMPING	SCALE JUMPING	
EQUITY	SCALE JUMPING	SCALE JUMPING	SCALE JUMPING	
BEAUTY	SCALE JUMPING	SCALE JUMPING	SCALE JUMPING	



What does LBC certification cost?

Registration Fee: \$900
 Certification Fee: varies based on project category and sf. ft.
 Range = \$1,750 - \$20,000

Photo: Ng - Unsplash



Comparing a few features of the 3 standards

Features	Fitwel	WELL Building Standard	Living Building Challenge
New Buildings	No	Yes	Yes
Existing Buildings	Yes	Yes	Yes
Mandatory Features	No	Yes, some	Yes, all
Onsite Assessment	No	Yes	Yes, after 12 months of continuous occupancy
Scoring	Total Points	Total Points + Mandatory Features	Mandatory Features
Length of Certification Period	3 Years	3 Years	Unlimited, after initial certification
Recertification Deadline	1 year after expiration	Before current certification expires	Not applicable


A Word about LEED v4

Photo: Artisan Moss, Hilton Lounge, Oklahoma



What more do you need to know?

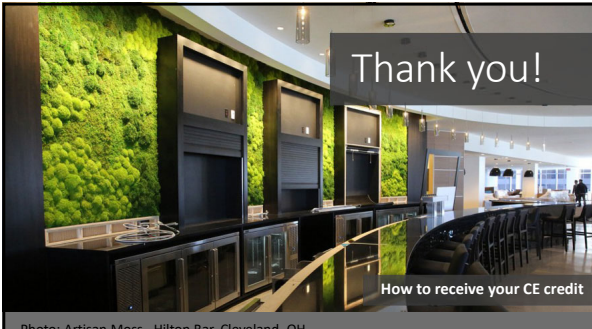
Wellness matters!
 Let's put more nature into human spaces.



Thank you!

How to receive your CE credit

Photo: Artisan Moss, Hilton Bar, Cleveland, OH



Looking for more Continuing Education?

- Authentically Green Interiors – Optimizing Nature's Design
- Living Walls – Case Studies
- Green Roofs
- The Economics of Biophilic Design
- Moss Walls – A Biophilic Design Solution

Learn more or donate at gpgb.org.

Photo: Mollie Anderson, McLaren Design, St. Paul, MN
 Location: Plazencia, West Bloomfield, MI



