An Introduction to ILFI, the Living Building Challenge, and Zero Carbon

NWCCC
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HALEY GARDNER
SENIOR SPECIALIST, ENERGY + CARBON
AGENDA

1. Introduction to ILFI + our programs
2. Overview of the Living Building Challenge
3. Deep dive into the Zero Carbon Certification
4. Discuss the value of a Zero Carbon approach to building design and construction
PHILOSOPHY, ADVOCACY + CERTIFICATION

Holistic
(including equity, beauty, health)

Measured by outcomes
(not a prescriptive checklist)

Validated by performance
(not prediction)

Guide collective advocacy
(remove barriers to change)

Evolved through application
(in Dialogue with project teams)
HOW THE LIVING BUILDING CHALLENGE WORKS

Proven performance rather than anticipated outcomes

- Holistic
- Any location, any scale, any program
- Pragmatic and tested
- Focused on key leverage points for maximum impact
- Regional solutions for varying climates and cultures
- Evolving
PROGRAM EVOLUTION

LIVING BUILDING CHALLENGE

LBC Standard updates
LBC projects
Project team feedback

We envision a world of carbon-positive buildings and products that reverse climate change and help local economies thrive.
Where is the CARBON in our buildings?

In the energy they consume

U.S. COMMERCIAL BUILDING ENERGY USE (2012)

- Natural gas: 32%
- Electricity: 61%
- Fuel oil: 2%
- District heat: 5%

U.S. ELECTRICITY FUEL MIX

- Coal: 28%
- Natural gas: 35%
- Nuclear: 19%
- Petroleum: 8%
- Hydro: 7%
- Wind: 6%
- Solar: 1%
- Geothermal: 1%

DATA: US EIA
EMBODIED CARBON

In the materials they require

As global construction accelerates
Adding 6 billion m² of area per year
Equivalent to another New York City every 34 days

+260 billion m²
OPERATIONAL CARBON

EMBODIED CARBON

energy efficiency
combustion elimination
renewable energy
low carbon design + materials

sequestration + offsets
low carbon design + materials
sequestration + offsets

energy efficiency
combustion elimination
renewable energy

DOCUMENTATION + AUDIT
Utility + Meter Data
Offset Contracts
Material Lists
Photos
Diagrams
Narratives
CERTIFICATION PROCESS

REGISTRATION

DOCUMENTATION

AUDIT

CERTIFICATION

living.future.org/certification

VALUE OF ZERO CARBON
CHARACTERISTICS OF ZERO CARBON
OPERATIONAL CARBON

- DAYLIGHTING
- HEAT RECOVERY & TRANSFER
- NATURAL + MIXED MODE CONDITIONING
- HEAT & INFILTRATION MANAGEMENT
- SIGNAL & RESPONSE
- RENEWABLE ENERGY
EMBODIED CARBON

LEAN DESIGN

RECYCLED OR REUSED

DURABLE

LOCALLY SOURCED

MANUFACTURED USING RENEWABLE ENERGY

NATURALLY SEQUESTERED CARBON
ACHIEVING ZERO CARBON

KEY PROCESS ELEMENTS OF ZERO EMBODIED CARBON
Low-Embodied Carbon Materials Procurement

Specify carbon as selection criteria

Request product-specific EPDs

RESOURCES
CARBON-SMART MATERIALS

HIGH-IMPACT MATERIALS
Predominant building materials with high-impact potential for emissions

Concrete
Steel

CARBON SMART ATTRIBUTES
Kiln type matters for cement
The different kiln types used for cement production, listed in descending order of preheater and precalciner kilns, use on average 8% less energy than wet kilns, which come from the preheater and precalciner kilns whenever possible.

Less cement = less carbon
After reducing the carbon impact of cement production, additional carbon reduction can be achieved by using supplementary cementitious materials (SCMs) (including, but not limited to aggregates, e.g., 1/4 in. coarse aggregate) where appropriate.

Consider new mixing methods
New methods for mixing concrete are being developed that can create high-strength concrete using an additional 10% cement by volume of the finished concrete of coarse aggregate concrete. This method results in 10% less cement that conventional concrete.

Utilize carbon sequestration (CO2 injection)
New technology captures waste carbon dioxide emitted from industrial processes permanently sequestered.

RESOURCE

EMBODIED CARBON RESEARCH, TOOLS & GUIDANCE

Carbon Leadership Forum

Embodied Carbon Benchmark Study
LCA for Low Carbon Construction
Part One

Life Cycle Assessment of Buildings: A Practice Guide

Published by:
The Carbon Leadership Forum

Traded by:
AECOM

www.carbonleadershipforum.org
ZE TOOLKIT FOR WA STATE

Available at commerce.wa.gov/seep under “Additional Resources”

EMBODIED CARBON GUIDANCE

living-future.org/zero-carbon-certification/
NEXT STEPS

1. Talk about carbon and use it as a metric for decision making.
2. Work towards transparency when it comes to material selection in both design and procurement.
3. Contact zc.support@living-future.org for additional support.

THANK YOU!

Haley Gardner,
Senior Specialist,
Energy + Carbon

Contact us at:
zc.support@living-future.org