



Carbon Leadership Forum
INFORM INSPIRE

ENABLE

**ANNUAL
REPORT**

2018-2019

ACKNOWLEDGMENTS

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College of Built Environments
Department of Architecture

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LETTER FROM THE DIRECTOR

Dear Carbon Leadership Forum Supporters,

Ten years ago a group of inspired individuals came together in San Francisco with a vision that the carbon footprint of building materials and products could be assessed as a performance metric on par with more common attributes such as cost, strength and beauty. They conceived of the Carbon Leadership Forum and committed to bring this vision to reality.

What an amazing decade of collaboration! We have come so far together aligning on shared goal of reducing and ultimately eliminate the embodied carbon emissions from building material manufacturing and construction.

Where we started: an intimate group sharing successes and challenges in the emerging practice of life cycle assessment with a single collective project: creating the product category rule (PCR) for concrete.

Where we are today: The Carbon Leadership Forum has grown exponentially in the past three years in sponsors and engagement. We are the 'go-to' resource for integrating embodied carbon in events, policy and projects.

With strong input from the Carbon Leadership Forum board, we have identified the priorities for the upcoming year:

- Supporting the broad dissemination of existing initiatives such as the Embodied Carbon Network and Embodied Carbon in Construction Calculator (EC3) and resources such as the LCA Practice Guide.
- Refining our identity and structure to enable us to communicate to an increasingly diverse audience.
- Implementing a communication and outreach plan in order to connect with a larger and more diverse audience bringing greater value to the AEC industry.

This will be a year of big change and big impact! We need to transform our successes with early adopters to broad industry action and we can't do that without your engagement and support. Please be on the lookout for calls to serve on committees and shape our next decade.

I'm excited to share details of the above and more in our 2019 Annual Report which highlights milestones and our current initiatives. You'll hear a selection of testimonials of how the Carbon Leadership Forum has helped individuals and organizations increase their impact. We are going further faster together!

Together we will inspire, inform and enable real action to lead towards the future we need. A future in which all people are housed in healthy and equitable communities and where the act of building is part of the climate solution, and not a climate problem.

Sincerely,



Kate Simonen

Director, Carbon Leadership Forum
Associate Professor
College of Built Environments
University of Washington



UNIVERSITY of WASHINGTON



*Reading the Carbon Smart Building Declaration at
the Global Climate Action Summit.
With a MEGAPHONE! Further Faster Louder!?!*

ABOUT THE CARBON LEADERSHIP FORUM

The Carbon Leadership Forum (CLF) is an industry-supported academic collaboration based at the University of Washington's Department of Architecture. We are a professional community of manufacturers, designers, builders, academics and advocates focused on measuring and reducing the carbon 'embodied' in building materials and exploring strategies to eventually eliminate these emissions.

The goal of the Carbon Leadership Forum is to inspire, inform and enable meaningful change through education, research and initiatives in order to provide building industry professionals and other multidisciplinary stakeholders the tools, resources and knowledge needed to reduce and ultimately eliminate embodied carbon impacts. We work together to test methods, share results and motivate each other to constantly improve.

The Carbon Leadership Forum provides building industry professionals and multi-disciplinary stakeholders with the tools, resources and knowledge needed to account for and reduce embodied carbon. We lead activities to promote low carbon ('carbon smart') solutions in order to foster a thriving clean and healthy built environment. Our work is guided by the following high-level goals:



Goal 1:

Build a movement!

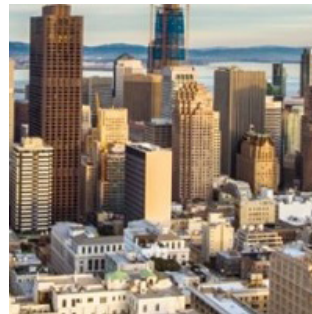
Develop platforms in order to inspire, inform and enable action to reduce embodied carbon in construction.



Goal 2:

Build knowledge and understanding

of embodied carbon through primary research and analysis.



Goal 3:

Accelerate industry adoption

by building consensus on embodied carbon data and reduction metrics in order to drive life cycle reductions and supply.



Goal 4:

Develop actionable data, tools and resources

and deploy them at scale in order to enable broad adoption of carbon smart solutions in practice and policy.

GOAL I: BUILD A MOVEMENT!

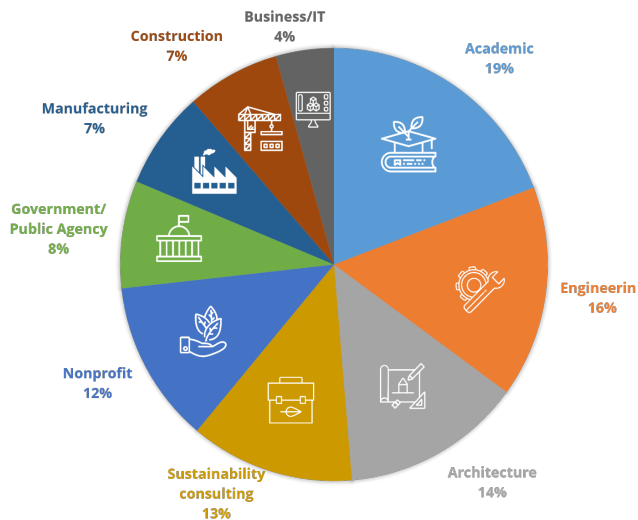
2018-2019 EMBODIED CARBON NETWORK

The Embodied Carbon Network is a vital outreach arm of the Carbon Leadership Forum. Open-access with no cost to participate, the network has grown exponentially.

EMBODIED CARBON NETWORK (ECN)

In 2017, the CLF convened the ECN in order to provide a forum for individuals working to measure, report and reduce carbon emissions attributed to building materials. ECN now comprises over 460 members from across the building sector, with like-minded professionals spanning 110 global cities and 16 countries.

MEMBERSHIP BREAKDOWN BY SECTOR



The ECN demonstrates significant potential to expand in size and scope, and members have already leveraged the platform to translate awareness into action (e.g. informing Buy Clean policies, penning op-eds and collaborating together on local initiatives).

EMBODIED CARBON NETWORK WEB FORUMS

This exciting resource has been called 'the Google for embodied carbon' - and provides a platform to get real-time answers to questions (some hot topics get dozens of comments), post research and build a community of embodied carbon experts and advocates. Each month the ECN hosts all-member calls including general discussions as well as topical webinars created by focus group volunteers. Over the past 12 months we've created six webinars on topics ranging from policy to renewable materials.

ECN FEATURED MEMBERS

Anthony Pak

anthony@priopta.com

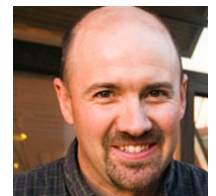
Anthony organizes regional, in-person meetings with the goal of creating local ECN chapters aligned with the global online effort.



David Arkin

david@arkintilt.com

David is the chair of a focus group containing experts on renewable materials that helps to inform Architecture 2030's carbon smart materials palette.



Victoria Herrero-Garcia

vherrero@ambient-e.com

Victoria volunteers to coordinate the quarterly ECN webinar series.



GOAL I: BUILD A MOVEMENT!

2018-2019 OUTREACH AND EVENTS

The Carbon Leadership Forum organizes communication platforms and events and collaborates with other NGO partners to integrate high quality embodied carbon discussions across the building sector. Sponsors collaborate with CLF staff to deliver integrated conference proposals and events.

CARBON SMART BUILDING DAY

September 11, 2018 in San Francisco

What: Part of the 2018 Global Climate Action Summit, a public event to raise awareness of need for coordinated action to reduce the carbon impact of buildings.

Who: Architects, structural engineers, contractors, owners, manufacturers and policy makers.

Why: Bring embodied carbon to the forefront of discussions and build alignment on 'carbon smart' building strategies.

Outcomes:

- Ed Mazria keynote-see video!
- Sold out event-over 300 people.
- Carbon Smart Building Declaration 100+ org's signed.
- Governor Inslee and other elected officials attended
- NGO alignment agreed of 5 key points (see ppt slides)
- Engineering News Record write-up.



CLF Director Kate Simonen with Governor Inslee (second from right) at the Global Climate Action Summit.

BUILD POSITIVE SUMMIT (NYC 2018)

June 20, 2018, New York City

What: A roadmap to transform buildings from climate problems to climate solutions sharing research and strategies for designing and constructing carbon sequestration design and construction.

Who: AIA convention participants and local CLF/ECN supporters.

Outcomes:

- Chad Frischmann of Drawdown keynote.
- Sold out event- over 70 people.
- After-party! Great connections and socializing.

CONFERENCE PRESENTATIONS AND TRAINING

The CLF has organized sessions and/or presented at the following major events in the past year:

- Embodied Carbon in Buildings, Boston 5/19
- Living Future, Seattle 4/19
- Building Lasting Change, CA-GBC Vancouver 5/19
- Washington State Capitol Budget Committee, 2/19
- Greenbuild, Chicago, 11/18
- Carbon Smart Building Day, San Francisco 9/18
- EPA Materials Webinar, Online, 8/18
- AIA Convention, New York, 6/18

Plans for the coming year include:

- Living Products Expo, October (CLF SIDE EVENT)
- Getting to Zero Forum, October
- Greenbuild, November (CLF SIDE EVENT)
- Architecture 2030 Carbon Day, February 2020

GOAL II: INFORM PRACTICE

2018-2019 RESEARCH

This was a productive year with several funded research projects being executed and completed. The Carbon Leadership Forum published results in both peer-reviewed journals and forward-facing professional summaries that are posted at carbonleadershipforum.org/resources. A highlight of current work includes:

BUY CLEAN WASHINGTON STUDY

Goal: Review and evaluate embodied carbon policies to limit the embodied carbon of structural materials used in State building projects.

Outcome: Report presented to the State Capitol Budget Committee and six projects piloting policy in 2019.

Sponsor: State of Washington

OFFICE BUILDING MEP SYSTEMS AND INTERIOR TI.

Goal: Estimate the embodied carbon of office mechanical electrical and plumbing systems and interior tenant improvements (two often ignored components).

Outcome: Report presented to the State Capitol Budget Committee and six projects piloting policy in 2019.

Sponsor: Oregon Department of Environmental Quality and the Charles Pankow Foundation



USDA CLT OPTIMIZATION

Goal: Develop parametric model to assess the optimum configuration (based on both mass and embodied carbon) of Cross Laminated Timber for commercial office building construction.

Outcome: Two journal articles, methodology report, source code, two graduate and one undergraduate thesis

Sponsor: US Department of Agriculture McIntire-Stennis

WHOLE BUILDING LCA POPULATION HEALTH

Goal: Conduct LCA of the structure and enclosure of the University of Washington Population Health Facility.

Outcome: Documented analysis in order to demonstrate performance improvement for LEED credit.

Sponsor: CLF Sponsorship and student credit

NSF RESILIENT AND SUSTAINABLE COMMUNITIES

Goal: Contribute embodied carbon estimates of tornado damage to an interdisciplinary NSF research project.

Outcome: Six undergraduate researchers contributed to LCA studies and a journal article developing probabilistic estimates of housing lifespan.

Sponsor: National Science Foundation

"There is a tremendous network of smart, compassionate professionals coming together under the umbrella of the CLF to exchange ideas and experiences. There is a lot to learn from each other, and momentum toward turning the built environment into a more carbon-efficient version of itself."

-Wolfgang Werner, Urban Fabrick

GOAL III: BUILD CONSENSUS

2018-2019 EMBODIED CARBON ALIGNMENT ACTIONS

The Carbon Leadership Forum has a reputation as a credible, unbiased source for life cycle assessment data and embodied carbon reduction strategies. We leverage our role as 'the Switzerland of embodied carbon' to convene challenging discussions and lead diverse teams to align mission and action.

CONCRETE PCR TECHNICAL EDITS

In 2017, the CLF published Version 2 of concrete product category rules (PCRs) for North America, then became part of a PCR committee formed in 2018 to provide technical edits for the new version. The Concrete PCR is THE STANDARD for reporting concrete carbon footprints and is used around the world.

SE 2050 CHALLENGE

CLF sponsors came together to define a challenge for Structural Engineers: to track and reduce structural material quantities with the aim of identifying pathways for radical reduction (and ultimately elimination) of structural embodied carbon. The SEI Sustainability Committee funded by ASCE is exploring development of a 2050 Commitment where firms (and/or individuals) commit to track and report structural material quantities and embodied carbon and meet increasingly stringent targets.

INTERNATIONAL LIVING FUTURES INSTITUTE

The CLF supported Living Futures' pre-conference 'carbon day' and the benchmark study which informed the embodied carbon requirements for their zero carbon certification. The CLF will contribute to a pre-conference session on carbon and hold a sponsor strategic planning meeting before the Living Products Expo in October.

"It's just simply easier to accomplish our own goals around embodied carbon when working with others, and the CLF connects us to other leading firms in this area."

-Amy Hattan, Thornton Tomasetti



US GREEN BUILDING COUNCIL

The CLF is developing a pilot embodied carbon specification and procurement credit, and will be co-hosting a half-day workshop on November 19, 2019 (the day before Greenbuild).

WORLD GREEN BUILDING COUNCIL

The CLF provided input for their Embodied Carbon Report and collaborated with them to refine 'carbon smart building strategies' highlighted at the Global Climate Action Summit.

SAN FRANCISCO BAY AREA CONCRETE CODE PROJECT

The CLF is part of a collaborative project funded by the Bay Area Air Quality Management District to increase demand for low-carbon concrete. The project consortium will produce model code language for local governments to adopt low-embodied carbon concrete specifications for residential and non-residential applications and will provide technical assistance to four pilot projects. Project partners include Marin and Alameda Counties, StopWaste, the Ecological Building Network, Arup and Central Concrete.

GOAL IV: DEVELOP RESOURCES & TOOLS

2018-2019 DATA TOOLS AND RESOURCES

To meet global GHG reduction targets, collaborative problem-solving is needed across trades, sectors and geographies. Below are some of the key initiatives the CLF is helping lead to foster collaboration.

EMBODIED CARBON CONSTRUCTION CALCULATOR

Scheduled to launch in Nov. 2019, the Embodied Carbon Construction Calculator (EC3) is a collaborative project between the CLF and C-Change Labs to develop a public, open-source EPD database and building planner. Formulated by CLF board member Stacy Smedley (Skanska) and championed by past CLF board member Don Davies (MKA), the EC3 project will fill a gap in existing tools and databases to help inform low carbon purchasing choices.



Teams on the new Microsoft Campus are currently piloting the tool, testing its goal to enable simple (but not simplistic) assessment of embodied carbon. Current funders include the Charles Pankow Foundation, the MKA Foundation, Skanska, Interface, Microsoft, Alexandria Development, Perkins + Will, Webcor, AIA, ACI and AISC.

MODEL LCA SPECIFICATIONS

The CLF supported development of model LCA specifications, which design and construction professionals can use to request embodied carbon data for structural materials. The LCA specifications aim to establish recommended product-specific LCA reporting data requirements, including material quantities data to support measurement of embodied carbon footprints of new construction projects and to help secure LEED v4 credits. The CLF published the LCA specifications in 2017, providing editable model spec language for EPD/LCA data collection.

CARBON SMART MATERIALS PALETTE

In 2018, CLF partner Architecture 2030 launched the Carbon Smart Materials Palette, a decision-making tool to provide designers with attribute-based guidelines for (1) designing buildings with low- or zero embodied carbon, and (2) specifying construction materials with low- or no- embodied carbon. The CLF has actively collaborated with board member Erin McDade (Architecture 2030) to support development of the initiative, through providing forums for industry stakeholders to learn about and inform tool development.

LCA PRACTICE GUIDE

In June 2018, the CLF published *Life Cycle Assessment of Buildings: A Practice Guide*, a step-by-step LCA primer. The Practice Guide introduces the use of LCA to analyze the environmental impacts of buildings and to help professionals apply LCA in practice. It also addresses the basic components of LCA and how it's used to evaluate building data.



ORGANIZATIONAL & FINANCIAL INFORMATION

CLF FAST FACTS

► History

CLF Launched 2010
40+ CLF/Project Sponsors
ECN Launched 2017
500+ ECN Members

► Staff

3 core staff (part-time)
6 engaged students
MANY volunteers

► Advisory board

9 members meet monthly

► 2018-19 Publications

5 Journal articles submitted
2 Conference proceedings
4 Professional reports
10+ Press references

► Event Stats

2 Hosted events
5 Webinars
15+ Presentations
2 Parties
2 Sponsor only meetings
4 Sponsor only updates

► Download Stats

3,500+ Publications
1,500+ Webinars

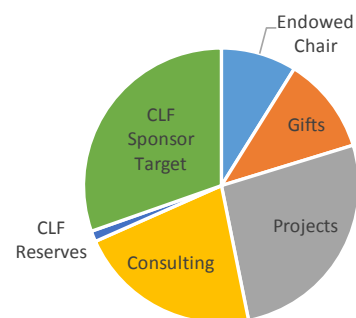
► Nonprofit 501(c)(3)

INCOME/EXPENSE BREAKDOWN

2019 CLF PROJECTED EXPENSE \$327,600



2019 CLF PROJECTED INCOME \$327,600



FUNDING SUMMARY

As noted above, sponsors provide over 25% of the Carbon Leadership Forum's operating budget.

Sponsor gift funds provide a highly flexible funding stream to advance the mission of the Carbon Leadership Forum.

For 2019, the Board recommends that we set an ambitious target for sponsor renewals in order to invest in developing alignment of the mission, clarifying the identity of the organization and initiatives (e.g. the Forum, Network and EC3 tool) in order to execute a powerful communication plan in time for the public release of the Embodied Carbon in Construction Calculator in November of 2019.

After we have identified the core values that the Carbon Leadership Forum can bring to existing and new sponsors, we will develop plans to expand our impact, inviting more organizations and individuals to join us as we build the movement!

The Carbon Leadership Forum is dedicated to developing the resources, tools and platforms you need in order to enable you to take meaningful action to reduce the embodied carbon in construction.

But **WE NEED YOUR HELP** to execute these exciting plans!

Interested in becoming a sponsor?
[Sign up here!](#)



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Institute
of Architects

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SKANSKA

Orca
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SUPPORT

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CORRIM | ECOLOGICAL BUILDING NETWORK | ENDEAVOUR CENTRE
NET ZERO ENERGY COALITION

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