

# ANNUAL REPORT

**2019-2020**



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## Advisory board

Eden Brukman, SF Dept. of the Environment  
Steph Carlisle, Kieran Timberlake  
Christie Gamble, CarbonCure  
Amy Hattan, Thornton Tomasetti  
Victor Olgyay, Rocky Mountain Institute

William Paddock, WAP Sustainability  
Kate Simonen, Carbon Leadership Forum  
Stacy Smedley, Skanska USA  
Wolfgang Werner, Urban Fabrick  
Frances Yang, Arup

## Staff and students

Kate Simonen, Founding Director, Professor  
Andrew Himes, Program Specialist  
Monica Huang, Research Engineer  
Julie Kriegh, Research Scientist  
Tina Dilege, Public Information Specialist

Moazamah Rubab, Undergraduate Research Assistant  
Vicki Rybl, Graduate Research Assistant  
Sofia Segebre, Database Management  
Aiwen Xie, Visiting Graduate Research Assistant  
Jim Ditto, Graduate Research Assistant

## Volunteer leads and consultants

### CLF Network Co-Chairs

Wil Srubar, University of Colorado Boulder  
Erin McDade, Architecture 2030  
Kate Simonen, University of Washington

### CLF Regional Hub Steering Committee

Anthony Pak, Priopta  
Caitlin Hart, Boston Society of Architects  
Martin Torres, Walter P. Moore

### Outreach Leads

Scott Henson, Carbon Innovations  
Victoria Herrero-Garcia, Ambient Energy  
Allyn Vodicka, Pivotal Lighting Design  
Affiliated Engineers, Inc.

### “News You Can Use” Leads

Martin Torres, Walter P. Moore  
Fred Bernstein, Independent Publishing

### Focus Group Chairs

David Arkin, Arkin & Tilt Architects, CASBA  
Steph Carlisle, Kieran Timberlake  
Jeremy Gregory, MIT  
Meghan Lewis, We Company  
Chris Magwood, Endeavour Centre  
Jordan Palmeri, Oregon Dept. of Env. Quality  
Stacy Smedley, Skanska USA Building  
Larry Strain, Siegel & Strain Architects  
Dave Walsh, Sellen Construction  
Ryan Zizzo, Mantle314

### Outside Consultants

Anne Banta (Branding and Communications)  
Brook Waldman (EC3 tool data and methodology)  
2M Creative (Graphic Design)

## Affiliation

University of Washington  
College of Built Environments  
Department of Architecture

# INTRODUCTION



# Letter from the Director

## Our Mission is Transformation

We're living through an extraordinary moment in human history, as though the 1918 flu epidemic, the 1929 market crash, and the 1963 March on Washington during the civil rights era were to occur simultaneously, but in the context of the global existential crisis of climate change. It's worth asking how recent events -- including the COVID shutdown, the public murder of George Floyd, and global protests against that murder -- have influenced our awareness of the structures of power and privilege in which we live.

The disastrous impacts of climate change are already felt most deeply by poor and marginalized communities of color around the world. This means climate change is fundamentally an issue of social and racial justice. The construction industry historically has perpetuated inequality, racial discrimination, lack of opportunity for people of color as well as insensitivity to the impact of manufacturing, development, urban design, and construction on communities of color. But companies and organizations across the industry are beginning to embrace change, inspired by initiatives such as the NAACP's Centering Equity in the Sustainable Building Sector.

Many of us are indeed becoming painfully more aware of our roles in supporting structural inequality, and we live in a moment of exceptional emotional rawness. But what matters most is not how we feel but what we will do.

Beginning in late spring, 2019, we engaged in a months-long process to re-imagine ourselves as an organization and a network. We interviewed scores of CLF members to help us articulate our vision, mission, and values more clearly and powerfully, and to use those new insights to guide our work.

- **Our Vision:** A transformed, decarbonized building industry – better buildings for a better planet.
- **Our Mission:** Eliminate embodied carbon in buildings and infrastructure by inspiring innovation and spurring change through collective action.
- **Our Values:** Determination, Empowerment, Integrity, Transparency, Inclusion, Collective Action.

In this extraordinary summer of 2020, we are beginning to understand what the words of our Vision Statement imply. Eliminating carbon emissions in building materials and construction is merely part of our larger work to create a just, equitable, thriving, sustainable human community that works for all.

We at the Carbon Leadership Forum commit to listen, learn and evolve in order to do our part to build connections and community in order to redesign social structures and examine assumptions that have enabled both racial oppression and carbon pollution. We look forward to working with you to expand the Carbon Leadership Forum's

capacity to support holistic solutions that enable social justice, equity and decarbonization.

Our most valuable assets are our imaginations, our networks, our relationships and collaborations. Working together, we can accelerate and magnify our impact. As friends, allies and partners, we can transform our world.



A handwritten signature in black ink that reads "Kate".

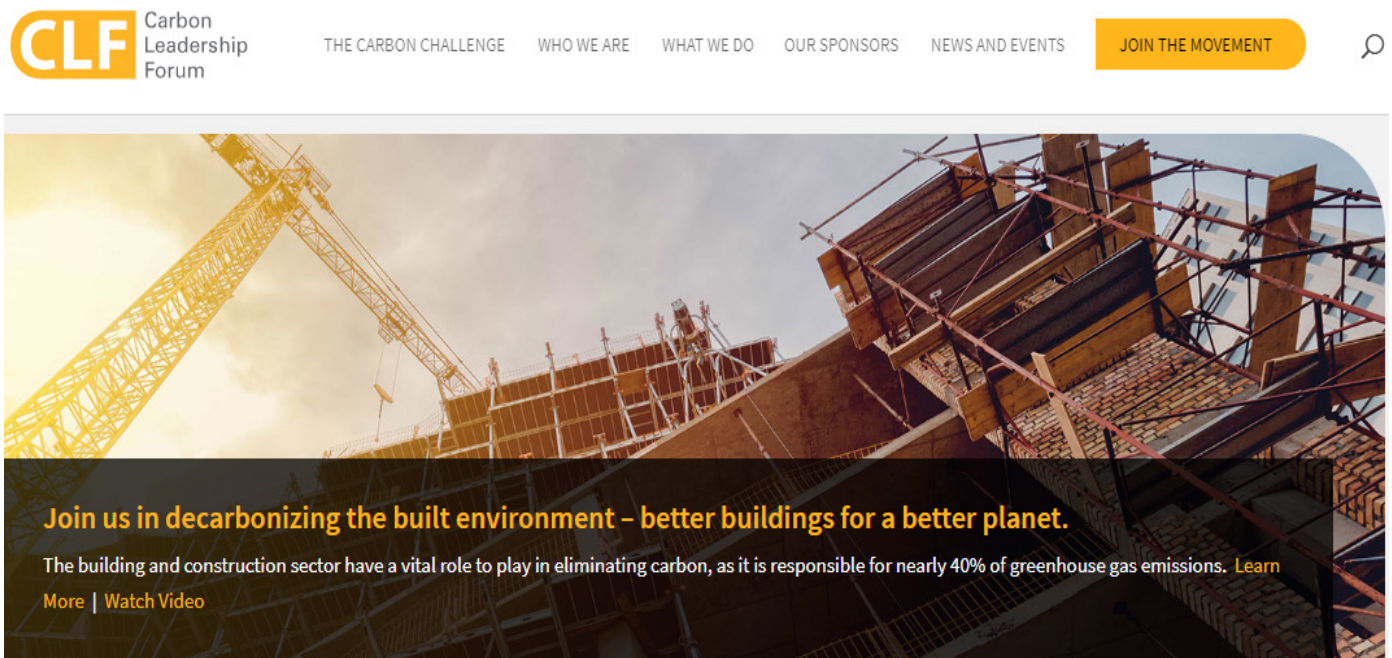
**Kate Simonen**

Founding Director  
Professor, Architecture & Engineering  
University of Washington

# Telling the CLF Story

You may have noticed that the CLF has a brand new look! A new logo, revised messaging, new website with new organization, navigation, fonts, and color, new monthly newsletters, new online CLF Community, new Youtube Channel, and so on. All this change was triggered in spring 2019 when the CLF commissioned an extensive survey of CLF community members, sponsors, and partners. Longtime CLF member Anne Banta conducted a feedback study, developed a report and recommendations, and then helped lead the plan's implementation.

## New Logo and Web Design



## Embodied Carbon News You Can Use



### Featured Upcoming Events (subject to change)

August 5-6: [E21 Global Congress](#) Los Angeles, CA  
September 8: [Global Conference Seattle](#) Seattle, WA  
[Upcoming] [International Mass Timber Conference](#) Portland, OR

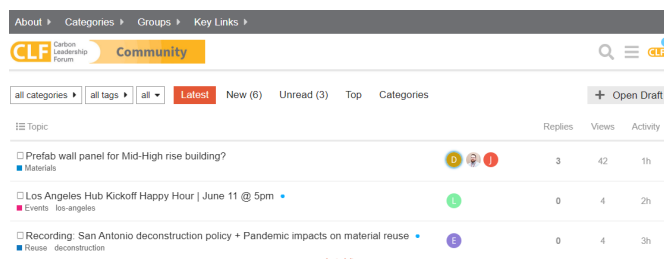
### Recent News, Research, Resources, and Discussion

**Carbon Leadership Forum (CLF) news and media**  
CLF now has local hubs in Atlanta, Austin, Australia, Boston, Calgary, Chicago, Denver/Denver, Hong Kong, London, Los Angeles, New York City, Pittsburgh, Portland, San Francisco Bay Area, Seattle, Toronto, Vancouver, and Yellowstone. [Add a CLF local chapter](#) now to help expand our network.

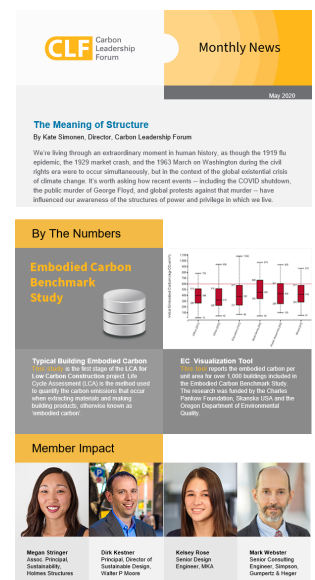
## Applying the New Brand

The new logo, colors, and design can be seen on all our communications platforms, from our website to the new community discussion platform, the newly launched *CLF Monthly Newsletter*, and *News You Can Use* (a monthly digest of resources, events, and webinars).

## Online Community



## Monthly Newsletter





# Who We Are



## Inspiring and spurring collective action to solve the embodied carbon challenge

**The Carbon Leadership Forum** accelerates the transformation of the building sector to radically reduce the embodied carbon in building materials and construction through collective action. We pioneer research, create resources, foster cross-collaboration, and incubate member-led initiatives to bring embodied carbon emissions of buildings down to zero.

We are architects, engineers, contractors, material suppliers, building owners and policymakers who care about the future and are taking bold steps to decarbonize the built environment, with an ardent focus on eliminating embodied carbon from buildings and infrastructure.

### Our vision

We envision a transformed, decarbonized building industry – better buildings for a better planet.

### Our mission

To eliminate embodied carbon in buildings and infrastructure by inspiring innovation and spurring change through collective action.

### Our values

Determination  
Inclusion  
Collective Action  
Empowerment  
Integrity  
Transparency



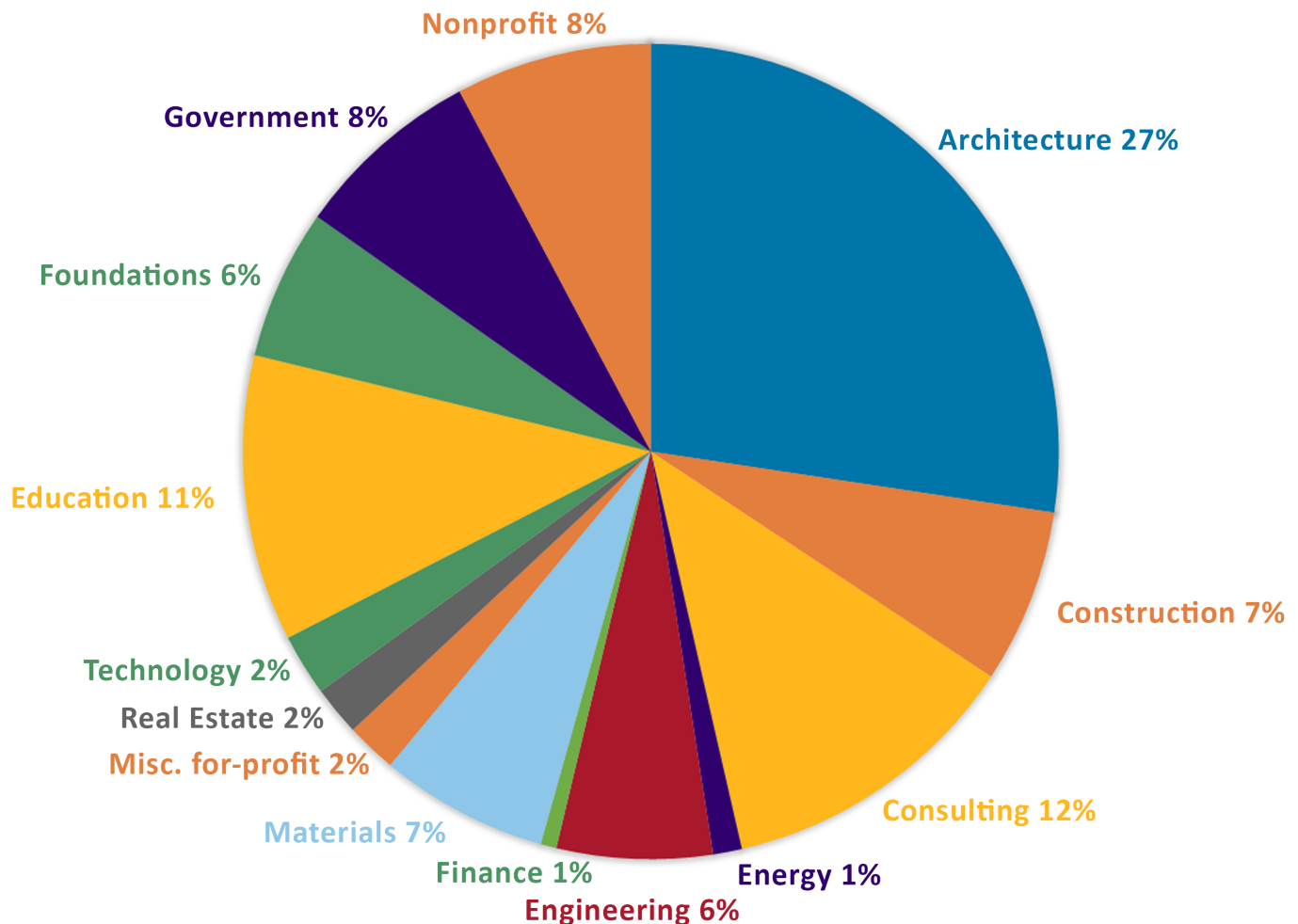
# Member Diversity

## ▶ A Diverse, Growing Network

The Carbon Leadership Forum network includes over 5400 individuals from 2650 companies and organizations, spanning the construction industry from both the private sector and public sector, including companies, nonprofits, educational and research institutions, government agencies and policy shops, consultants and foundations.

## Our Vision

**A transformed, decarbonized building industry – better buildings for a better planet.**







# Member Impact

## Individuals and organizations: farther, faster, together!

Carbon Leadership Forum members are architects, engineers, contractors, material suppliers, building owners, policymakers, and researchers working in 1020 cities, 45 US States, and 79 countries around the world.

**Visit Member Impact on the CLF website**

### What are you and your company doing to help reduce embodied carbon?

**Amy Hatten** *Vice President for Corporate Responsibility, Thornton Tomasetti*

Within my firm, Thornton Tomasetti, we've caught the "embodied carbon bug" big-time. I co-lead our embodied carbon community of practice, with an ever-growing membership. Within the community, we have working groups that are tackling issues like specifications, education and resource development, tool development, assessments and calculations, and how we can support industry-wide efforts..



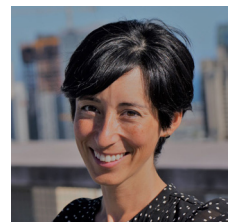
**Wolfgang Werner** *President & CEO, Urban Fabrick, Inc.*



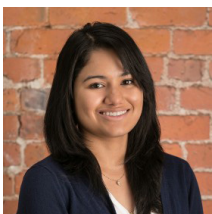
Urban Fabrick's mission is to work toward a more sustainable version of our built environment. We know that a focus on embodied carbon emissions must complement our ongoing focus on operational energy efficiency and associated operational emissions! Therefore, we made the strategic decisions several years ago to add Life Cycle Assessment (LCA) to our suite of services – as a key tool to be able to quantify embodied carbon impacts and devise design strategies to reduce them..

**Miya Kitahara** *Program Manager, StopWaste*

My most inspiring work at StopWaste is around making the climate-materials nexus visible. I've been a vocal advocate for uncovering this carbon blind-spot among local governments through inclusion of consumption based emissions inventories in their climate action plans. And among embodied carbon of all the materials that flow into a community, the built environment is where governments have the most influence and potential impact.



**Stefanie Barrera** *Architectural Staff, SMR Architects, UW MArch 2018, CLF Staff 2016-17*



Working in the affordable housing industry, it is clear to me that affordable housing needs better financial support to be able to participate in reducing embodied carbon emissions. From the onset, many affordable housing organizations struggle to secure funding sources to make a project happen. Implementing actions to reduce embodied carbon emissions requires more funds than most of these projects are able to acquire. I want to address the predicament affordable housing projects face in being able to reduce their embodied carbon emissions.

# How We Do It



## Research

We investigate pathways for maximizing carbon reductions and lead collaborative research with material experts, NGOs, industry partners and policymakers.



## Resources

We accelerate learning by crowdsourcing and disseminating knowledge that empowers our members.



## Network

We bring together architects, engineers, contractors, material suppliers, building owners, policymakers and associations, through environments designed to connect inspired advocates and spark unprecedented collaboration.



## Initiatives

We accelerate market transformation by inspiring, supporting and empowering our members to advance new ideas through impactful initiatives.



## Sponsors

Our programs are the result of the generous pledges made by our Sponsors.

We invite you to join our coalition of architects, engineers, contractors, materials suppliers, building owners, policymakers and associations committed to radically decarbonize buildings and building materials.

➤ Become a Member

➤ Join or start a Focus Group

➤ Learn more about our  
NGO Roundtable

➤ Join or Start a Regional Hub

➤ Become a Sponsor

➤ Propose an Initiative

# OUTCOMES





# Research

The Carbon Leadership Forum publishes research results in both peer reviewed journals and forward facing professional summaries posted at [carbonleadershipforum.org/resources](https://carbonleadershipforum.org/resources). Recent projects from 2019-2020 include:

## Buy Clean Washington Study | Completed



**Goal:** To review and evaluate embodied carbon policies to limit the impact of structural materials used in state building projects.

**Outcome:** We provided a comprehensive report to WA State and participated in critical meetings. Although the bill did not move forward in the 2018 legislative session, a modified version of the proposed study was included in the capital budget. We recently received funding to expand upon this work to support both state and federal procurement policies.

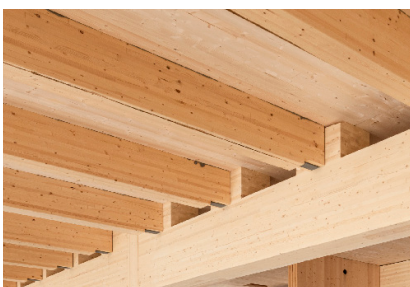
## LCA of WeWork Tenant Improvement Project | Completed



**Goal:** To understand the environment impacts of a typical WeWork office and how WeWork can reduce embodied carbon across its supply chain.

**Outcome:** We were asked to estimate these impacts by performing an LCA of a sample WeWork commercial office tenant improvement project. We identified critical items in the project to help WeWork understand the environmental impacts of its supply chain.

## LCA of Kattera's Catalyst Building | Completed



**Goal:** To analyze environmental impacts of Kattera's Catalyst Building, a five-story office building using CLT as a structural and design element. Developed by Avista and McKinstry, Kattera largely designed and constructed the building, and used CLT produced by Kattera's new factory.

**Outcome:** An LCA study enables Kattera to better understand life cycle environmental impacts of mass timber buildings and identify opportunities to optimize performance of mid-rise CLT structures.

## LCA of UW Population Health Facility | Completed



**Goal:** The Hans Rosling Population Health Facility (PHF) is a 9-story, 390,000 gross square foot building at the University of Washington (UW). The project team asked the CLF to determine if the designed building would meet the requirements of LEED's whole building life cycle assessment (WBLCA) credit.

**Outcome:** We compared the as-built designed building with a benchmark proxy building and found that the building did meet the requirements for the WBLCA credit, justifying LEED points for the project.



# Resources

The Carbon Leadership Forum develops and shares resources with the public as a product of its research efforts.

## Our Resource Library

This is a go-to source for information on decarbonizing the built environment, with a keen focus on embodied carbon. By crowdsourcing and disseminating this information, we aim to accelerate learning and increase knowledge, thereby empowering our members with the information needed to advance new ideas and approaches that result in a transformed, decarbonized building industry. The Carbon Leadership Forum resource library includes:



CLF Research



CLF Publications



News and Events



Videos



Books



LCA Inventories and Data



Foundation Resources



Partner Resources

## Resource Highlights 2019-2020

### Wood Carbon Seminars

We recently organized and launched an online seminar series answer common and critical questions about the carbon impacts of wood. The seminars consist of four presentations and four discussion sessions. Sponsored by industry partners, the seminar sessions are presented by wood experts from research and industry. The recorded webinars are available online.

### Embodied Carbon Annual Webinar Series

We host a six-part annual webinar series based on Focus Group topics. Each session includes 4-5 panelists who share research, strategies, initiatives and case studies to measure and reduce embodied carbon during design, construction and operation of buildings.

### Monthly Newsletters

In winter 2020, we launched a two-part monthly newsletter series. *Monthly News from the Carbon Leadership Forum* includes feature articles and interviews about people, initiatives, tools, projects and innovations related to embodied carbon from across the Carbon Leadership Forum network. *News You Can Use* highlights webinars, conferences and meetings, publications, and significant discussions on the online Carbon Leadership Forum Community platform.



# Network

## ▶ A Diverse, Growing Membership

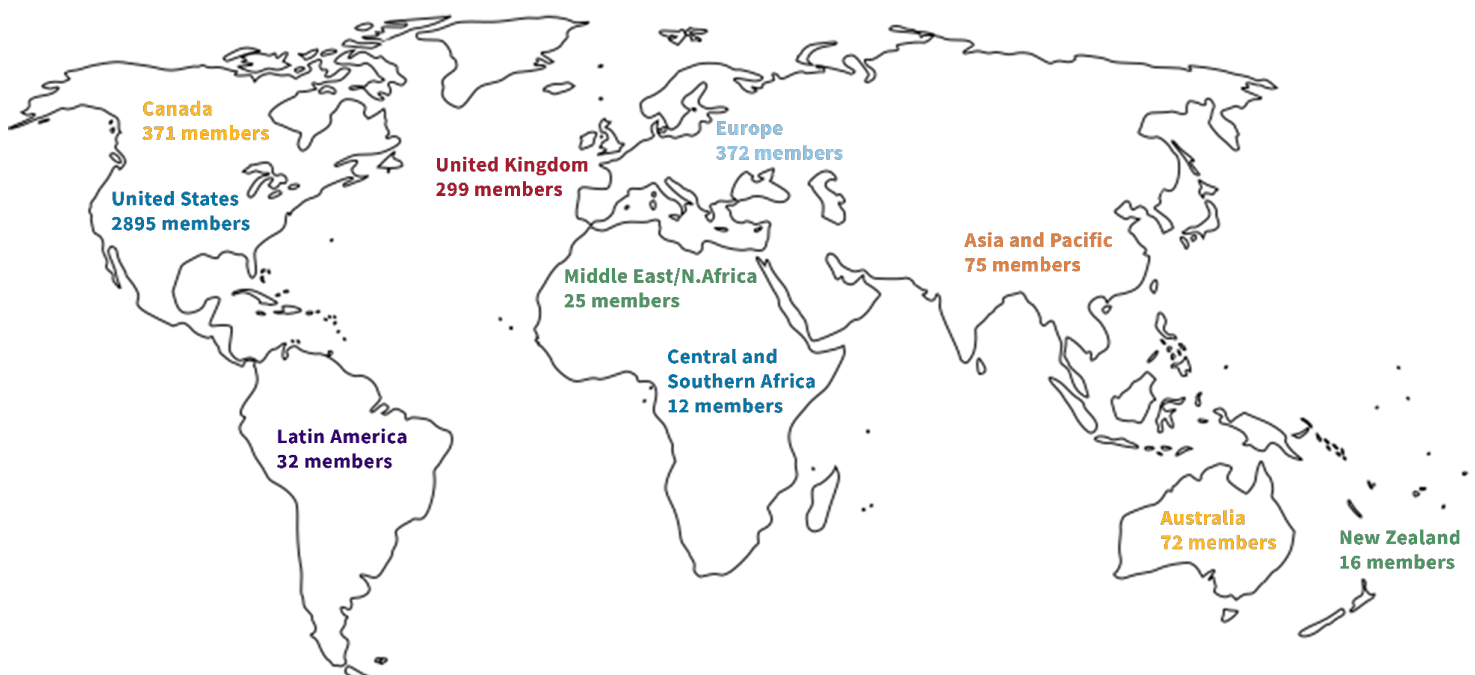
The Carbon Leadership Forum connects its members – from architects, engineers, contractors, material suppliers, building owners, policymakers, and associations – through its robust online Community Platform, active Focus Groups, burgeoning Regional Hubs, and NGO Roundtable. Together they contribute to and access our research projects and resource library, connect at vibrant, interactive events and webinars and actively engage in member-led Initiatives. This network is dedicated to accelerating the transformation of the building sector to radically decarbonize buildings and building materials through collective action.

The Network brings together thousands of professionals from across the building industry, from 45 US states and territories, 79 countries, and 1020 cities around the world.

Often described as “collaboration at its best”, the Carbon Leadership Community Platform is a key tool in accomplishing our mission to decarbonize the built environment. The Community is characterized by its determination to make a difference; a welcoming, inclusive environment; encouragement and empowerment of its fellow members; along with the integrity and transparency of the information exchanged.

The result: Our Community, rooted in a collective action model and positive, productive collaborations is constantly inspiring innovation and spurring change.

## In 2020, the CLF Network Spans the Globe







# Network

## Regional Hubs

Regional Hubs are springing up in the United States, Canada, Australia, Europe and Asia. Anthony Pak of Priopta created the first local group in Vancouver, Canada. Since then, many enthusiastic professionals have created collaborative groups interested in sharing best practices, discussing solutions and spreading the word about embodied carbon. By mid-2019, hubs have been formed and have convened public meetings or webinars in a dozen cities, and another dozen are in active development. Each Regional Hub uses our Community platform for messaging and announcements.



## Focus Groups

We have formed several focus groups allowing members to better tackle the challenges of embodied carbon through targeted efforts. The current list includes groups focused on Buildings, Construction, Education/Research, LCA Data & Tools, Materials, Outreach, Policy, Renewables, Reuse, Structural, and ISO Environmental Standards. Focus Groups have online discussions using the Carbon Leadership Forum's Community Platform, participate in quarterly network calls, and host scheduled webinars featuring leading experts.



## Online Community

In spring 2020 we launched a new online communication platform for members to join discussions, engage with others and share news. By June, over 1500 Carbon Leadership Forum members had joined, had logged in a total of over 42,000 times, and had created or commented over 500 times on discussion topics related to embodied carbon. Members use this shared learning laboratory to post topics for conversation, seek advice and feedback, propose initiatives, and share resources.



## NGO Roundtable

The Carbon Leadership Forum is built on a model of collective action and impact, relying on an engaged and informed community to spur accelerated outcomes. Organizational members of the Roundtable collaborate on how best to take actions towards a common goal of decarbonizing the building section. Leaders from around the world share plans and resources, using expertise and community to take complementary actions that accelerate market transformation.





# Regional Hubs

## ▶ In 2020, 12 Regional Hubs, 12 More Now Under Development!

The idea for to start a Regional Hub first germinates when a few CLF members in a city or region volunteer to host a local CLF network. The startup committee issues a call to share best practices, discuss solutions and spread the word on how we can decarbonize the built environment. Meetings take place in an video conference or at an office or coffeehouse, and are continued in an online group hosted by the CLF Community.

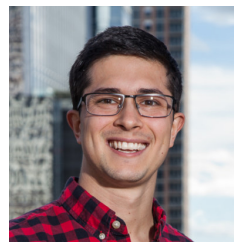
### Steering Committee



Anthony Pak, Priopta  
Vancouver Hub



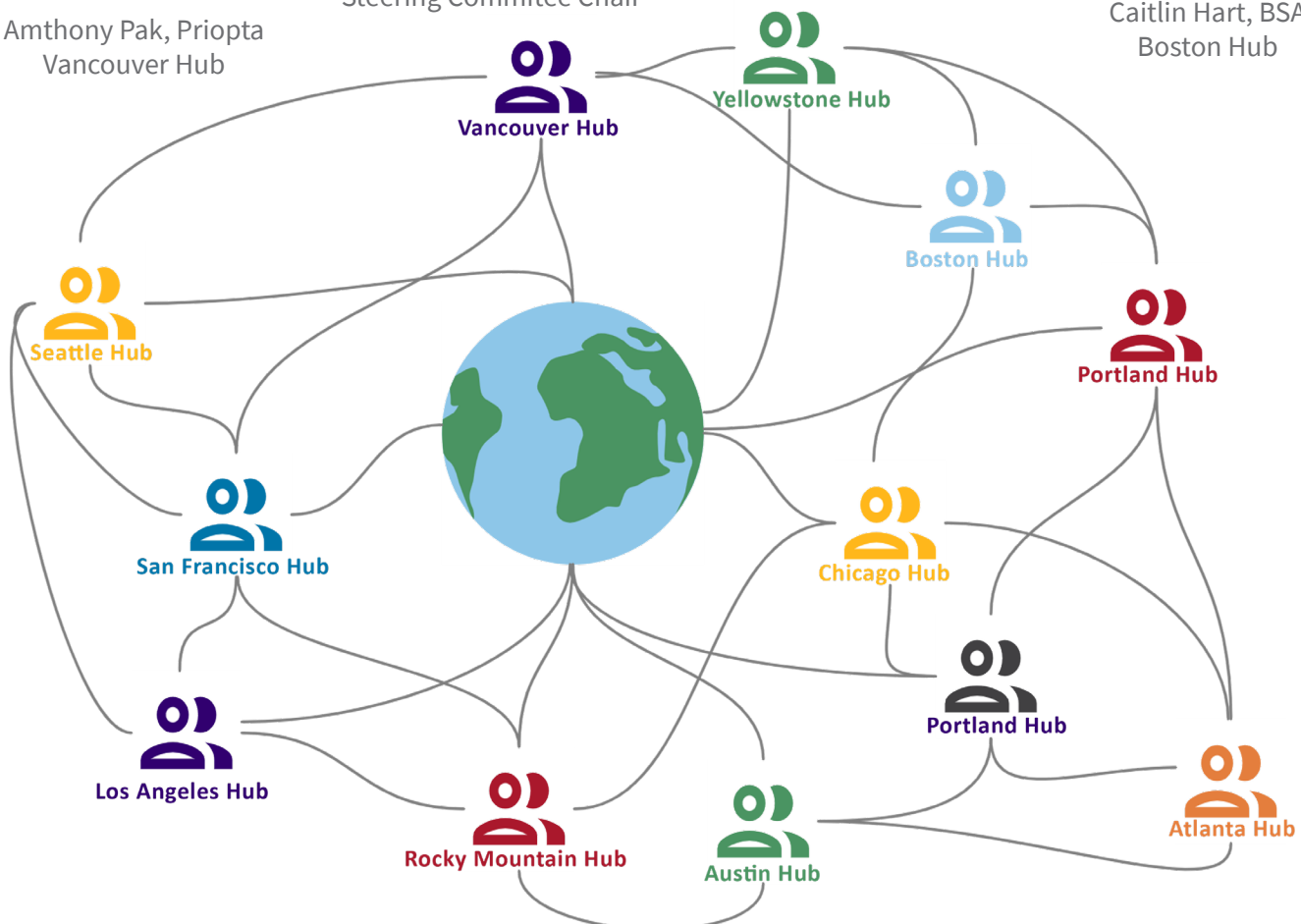
Wil Srubar, Katerra &  
UC-Boulder  
Steering Committee Chair



Martin Torres, Walter P. Moore  
Austin Hub



Caitlin Hart, BSA  
Boston Hub





# Initiatives

Key to our values is “action”. We empower our members and partners to advance new ideas and approaches and launch impactful member-led initiatives and projects. Not only do we pave the way and accelerate action by providing the research, resources and connections to fuel these ideas, but we often incubate the project and provide funding connections.

## ► Structural Engineers 2050 Challenge (SE 2050) | Ongoing



Members of the Carbon Leadership Forum developed a CHALLENGE to inspire structural engineers to contribute towards the global vision of Zero Carbon buildings by 2050 through committing to meeting embodied carbon benchmarks and ambitious reduction targets. The American Society of Civil Engineers Structural Engineers Institute (SEI) have taken on this challenge working to create a commitment program. Learn more about their work at [www.se2050.org](http://www.se2050.org).

## ► Bay Area Embodied Carbon Project | Completed



The CLF supported a collaborative proposal by Marin County, StopWaste, Alameda County, and the Ecological Building Network to establish best practices, specifications and model policies that address the embodied emissions in building materials, starting with concrete. On January 1, 2020 Marin County adopted the Bay Area Low-Carbon Concrete Code, the first building code of its kind in the United States. Bruce King a Carbon Leadership Forum member, catalyzed the code’s development.

## ► Embodied Carbon Policy | Ongoing



Buy Clean is embodied carbon procurement policy enacted in California and under consideration in other states. In 2018, CLF produced a study of existing embodied carbon policy and proposed methods to categorize structural materials and report structural material quantities and origins. In 2020 and beyond, CLF will provide resources, training and strategic consultation to inform Buy Clean efforts at city, state and federal level.

### Do you have an idea for an initiative?

We have an Initiatives Team ready to listen to your idea and recommend paths forward. We are committed to radically decarbonize the built environment by supporting and empowering our members to advance new ideas and approaches through impactful initiatives that translate into action. [Submit your idea on the CLF Network site.](#)

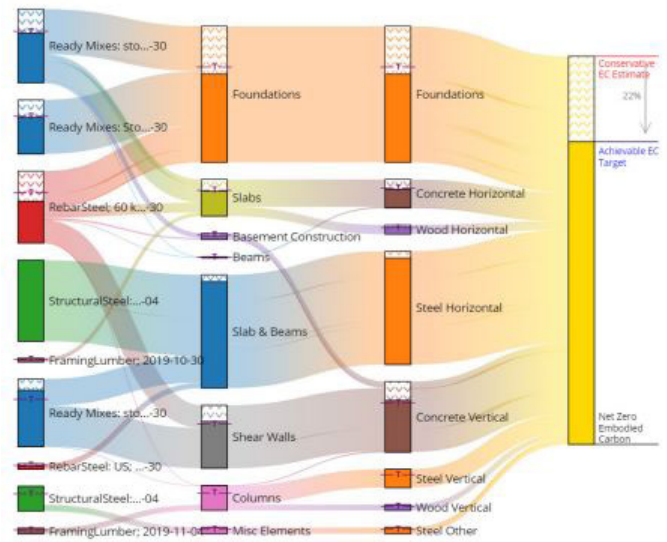


# Initiatives

## Embodied Carbon in Construction Calculator (EC3) | Ongoing

The Embodied Carbon in Construction Calculator (EC3) tool is a free and easy to use tool that allows benchmarking, assessment and reductions in embodied carbon, focused on the upfront supply chain emissions of construction materials.

Skanska USA and C Change Labs conceived of the solution, and initial development was jointly funded by Skanska and Microsoft, who determined that an open platform would provide maximum impact for the industry and society at large. To accelerate development of this solution, the Carbon Leadership Forum incubated the project with strong leadership and additional financial support from Autodesk, Interface, the MKA Foundation and the Charles Pankow Foundation, lead sponsor and grant manager. With over 50 foundation and industry sponsors in support the tool was launched publicly in November of 2019.



EC3 Tool Diagram of Carbon in a Reference Building

## Find & Compare Materials

Simple sorting and visualization of supply chain specific EPD data, with the ability to see material category baselines and set material category targets.

## Plan & Compare Buildings

Simple visualization of a project's potential and realized upfront embodied carbon emissions, with the ability to see conservative baselines and set achievable reduction targets.

## Declare Your Products

Digital EPD platform and EPD automation. View specific EPD data per product in a standardized digital format.

## Verify & Audit

Audit and verify digital EPDs, if you are a Program Operators/LCA Practitioner responsible for third-party verified EPDs.

Continued development of the EC3 The tool is in the hands of a new nonprofit, Building Transparency.

The EC3 tool's subsequent effect on the industry is driving demand for low-carbon solutions and incentivizing construction materials manufacturers and suppliers to invest in disclosure, transparency and material innovations that reduce the carbon emissions of their products.

The Carbon Leadership Forum is responsible for establishing the data and methods used to categorize and assess the embodied carbon data in the EC3 tool. Extracting data from PDFs and creating a digital EPD database requires some interpretation and each material has unique performance and life cycle assessment issues to address when evaluating results included in EPDs.



# **ORGANIZATIONAL INFORMATION**



# Funding

## Fast Facts

### History

CLF launched in 2010  
44 sponsors in 2019  
ECN (now the CLF Community)  
launched in 2017  
2000+ Community members

### Staff

4 core staff  
4 engaged students  
Many volunteers

### Advisory Board

10 members meet monthly

### 2019-2020 Publications

4 new journal articles submitted, 3  
published  
2 conference proceedings, 2  
published  
3 professional reports  
24 press and web articles  
or references

### 2019-2020 Event Stats

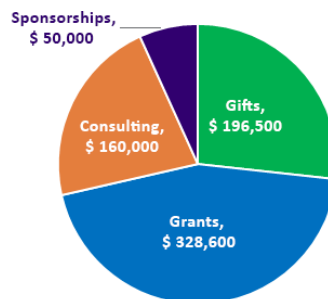
2 hosted events  
11 webinars  
13 presentations  
3 panels hosted  
12 sponsor only meetings  
12 sponsor only updates

### Resource Stats

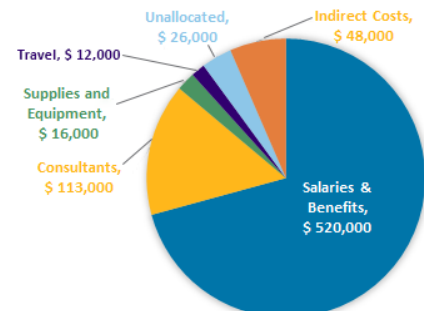
36 total publications

## Income/Expense

### 2020 CLF PROJECTED INCOME \$735,000



### 2020 CLF PROJECTED EXPENSE \$735,000



## Funding Summary

As noted above, sponsorship and gifts 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.

In 2019, the Board invested in developing alignment of the mission, clarifying the identity of the organization and initiatives. The result is new branding and messaging, a new taxonomy of resources, and new communications channels, including the new website, newsletters, and social media presence (LinkedIn, Youtube, and Twitter).

For 2020, the Board recommends that we set an ambitious target for sponsor renewals in order to finance new staff positions for a Research Engineer and Managing Director, and staff support for the online CLF Community and a variety of new member-driven initiatives.

Over the past three years, we have begun to function as a collective impact backbone organization for the decarbonization movement. A significant new initiative is our global NGO Roundtable of organizations in the building industry collaborating to rapidly reduce embodied carbon in materials and construction.

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

But WE NEED YOUR HELP to execute these exciting plans!  
Interested in becoming a sponsor? Contact [ksimonen@uw.edu](mailto:ksimonen@uw.edu).



# Sponsors

## Diamond



## Platinum



## Gold



## Silver

Adrian Smith + Gordon Gill | AIA Seattle | Ambient Energy | Arkin Tilt Architects | Brightworks  
Climate Earth | Coughlin Porter Lundeen | Kattera | LMN Architects | Lund Opsahl | National Ready  
Mixed Concrete Co. | SHKS Architects | Siegel & Strain Architects | WRNS Studio



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