BEYOND NEUTRAL

2021 Annual Report

climatepositive design

Contents

Climate Positive Design's mission is to

Provide a significant contribution to reversing global warming.

By bringing people together to remove as much CO_2 from the atmosphere as possible in the exterior built and natural environments. Through thought leadership and the development and sharing of tools, guidance and resources.

Why?

According to Architecture 2030, the urban built environment is responsible for 75% of the world's global greenhouse gas (GHG) emissions. To prevent irreversible, catastrophic climate impacts to humanity and the planet, we must take action now.

Not only do we share the responsibility of reducing those emissions, but through landscapes, we can actively take carbon dioxide (CO2) out of the atmosphere. Through thoughtful design we have the opportunity to remove even more carbon than our projects emit – becoming climate positive. Work that simultaneously advances more resilient and equitable communities and biodiverse environments while helping stay within the 1.5°C carbon budget.

Climate Positive Design (CPD) was founded in 2019 as part of a research initiative supported initially by the Landscape Architecture Foundation (LAF) Fellowship for Innovation and Leadership. The initiative is grounded in the following principles:

Leadership, Education, Empowerment and **Collaboration**

Pamela Conrad, CPD Founder and Principal of CMG Landscape Architecture leads the initiative in close collaboration with the following Advisory Partners and team members. All contributors are listed on the website www.ClimatePositiveDesign.com

Who can contribute?

Landscape architects, designers, planners, related disciplines, organizations, municipalities, developers, academic institutions, students, property owners, and many more ...

Pamela Conrad
PLA, ASLA, LEED AP
Founder

"I grew up on a farm in the mid-western United States. I loved everything about the trees, plants, animals, and water that was part of our everyday life. This is why I became a landscape architect. Embedded with a deep sense of responsibility for our environment, I am committed to doing everything I can to help us make a positive impact on climate change."

CMG atelier ten CATAPULTDESIGN Martha Schwartz Partners MSP LAF Landscape Architecture Foundation American Society of Landscape Architects CSLA AAPC IFLA International Federation of Landscape Architects LACF FAPC architecture 2030 Australian Institute of Landscape Architects

Over **40 volunteers** from **30+ organizations** in **6 different countries** for **ONE CAUSE**

RESEARCH & DESIGN


Kevin Conger
CMG


Chris Guillard
CMG


Willett Moss
CMG


Jamie Phillips
CMG


Rayna deNiord
CMG


Greg Barger
CMG


Eustacia Brossart
CMG


Kate Lenahan
CMG


Kristen diStefano
Atelier Ten


Prateek Jain
Atelier Ten

ADVISORY PARTNERS / COLLABORATORS


Martha Schwartz
Martha Schwartz Partners


Vaughn Rinner
ASLA


Colleen Mercer Clarke
CSLA|IFLA


Barbara Deutsch
LAF


Martin O'Dea
AILA


Hope Parnham
CSLA


Claire Martin
AILA


Verity Campbell
AILA


Kotchakorn Voraakhom
IFLA


Dilraj Watson
Landscape Institute


Ed Mazria
Architecture 2030


Vincent Martinez
Architecture 2030


Sarah Fitzgerald
ASLA


Madeline Kirschner
ASLA


Chingwen Cheng
ASLA


Chris Hardy
ASLA


Deanna Lynn
ASLA


Lucinda Sanders
LAF


Laura Solano
LAF


2018-2019 LAF
Fellow Cohort

TECHNOLOGY


Edan Weis


Tyler Maisano


Cameron Nimmo


Larry Lague


Antoinette Marty

COMMUNICATIONS/ART DIRECTION


Lauren Peters Lague
Salesforce


Anne Donnard
Emerson Blue


Chris Hepner
CMG


Paulina Tran
CMG


Jamie Yousten
CMG

Tools. Resources. Guidance.

The **Climate Positive Design Challenge** establishes carbon performance targets for projects to accomplish. The goal is to increase carbon sequestration and reduce and offset emissions within the site as soon as possible, taking more CO2 out of the atmosphere than emitted and becoming climate positive.

Although current "business as usual" practices show emissions greater than sequestration on site design projects, CPD's tools, guidance and resources support the following:

For all site design projects to:

- **take more CO2 out of the atmosphere than emitted by 2030** and
- **by 2050 to remove 1 gigaton of CO2 beyond offset emissions** to support preventing the 1.5°C temperature increase and remaining 340GT carbon budget

Removing 1 gigaton from the atmosphere by 2050 would place this initiative in the top 80 Solutions listed in "Drawdown", by Paul Hawken. "Drawdown" is a comprehensive plan that identifies strategies when combined together by 2050 would reduce GHG concentrations on an annual basis, thus reversing global warming.

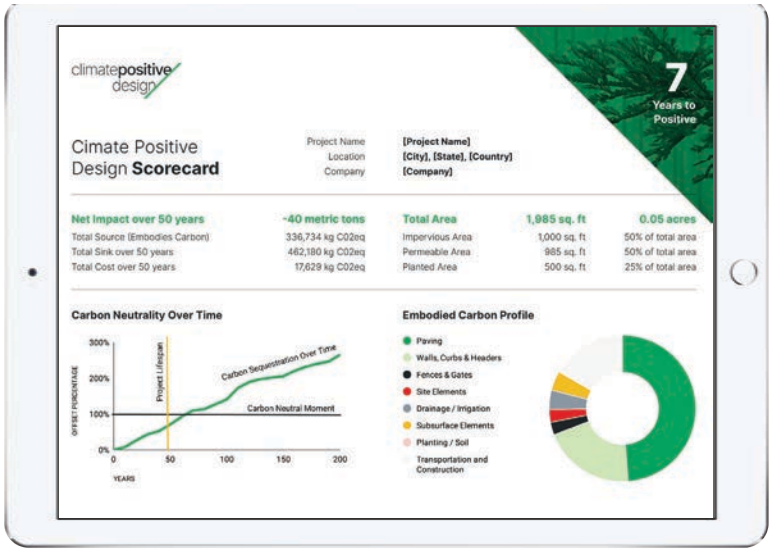
Targets are established as follows:

- **5 years to positive** for parks, residential, on-structure, mixed-use or campus developments
- **20 years to positive** for streetscapes or plazas

Targets were informed by case studies and a design toolkit that outlines strategies is provided on the website:
www.ClimatePositiveDesign.com

To meet the goals of the Challenge users log projects into the web-based application called the **Pathfinder.** By inputting basic material and plant quantities along with maintenance plans, it calculates embodied and operational carbon emissions along with carbon sequestration. The time it would take for the project to offset it's emissions is calculated giving a climate positive score, and the Pathfinder provides guidance on ways to reduce emissions and increase sequestration to improve their score and meet the goals of the Challenge.

A scorecard is provided that can be shared with others and projects can be updated at any point in time.



The methodology and metrics have been evaluated to align with industry standards by the environmental consulting firm Atelier Ten, sequestration data is derived from the US Forest Service and embodied carbon values are from the Athena Impact Estimator and Environmental Product Declarations (EPDs). A full report is available on the website.

Special thanks to Vestre and Atlanta BeltLine Inc. for supporting the 2021 expansion of materials and ecosystem sequestration in the Pathfinder.


9:41
4 years until my project will be climate positive.
The sooner you offset your project's carbon footprint, the more positive impact it has.
carbon sequestered
2023
time

path finder

Impact

The **Climate Positive Design Challenge** launched on September 30, 2019 to culminate a month of the largest climate activism events in history. Most recently the statistics through the second year were collected and shared at COP26 and the 2021 American Society of Landscape Architecture (ASLA) Conference.

Active tracking, recording, and analysis by a data analytics expert allows for understanding a comprehensive global impact of the initiative's impact on climate change – a contribution that has been relatively unknown to date.

The Advisory Partners review the data collected on an annual basis and advise on whether the targets should be modified based on how well contributors are meeting the goals.

Although the data collected in the early stages of any initiative carry the highest level of uncertainty possible, the statistics from the first two years provide a promising glimpse into the potential impact of this initiative. As recorded, the impact of the projects logged within the first two years show:

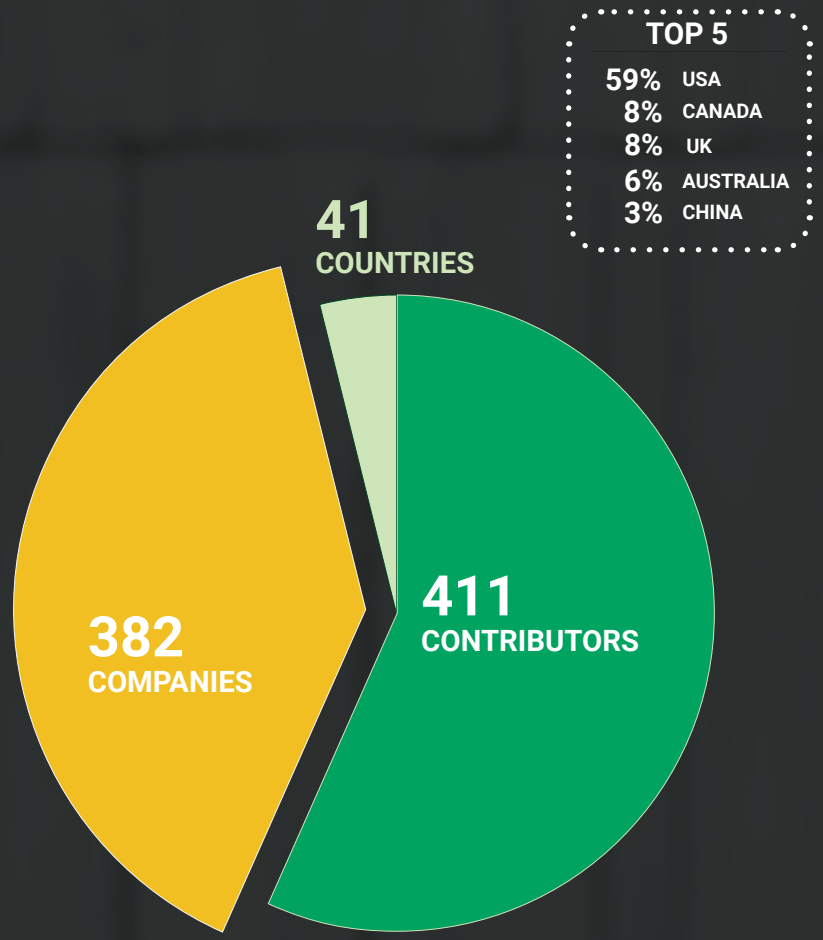
Impact by 2040

1.8 million tonnes of CO2
sequestered beyond offsetting project emissions

Impact by 2050

4.6 million tonnes of CO2
sequestered beyond offsetting project emissions

OFFICIAL PROJECTS LOGGED IN PATHFINDER from the first two years ...



560 PROJECTS LOGGED WITH FULL DETAILS
OUT OF 3,626 total

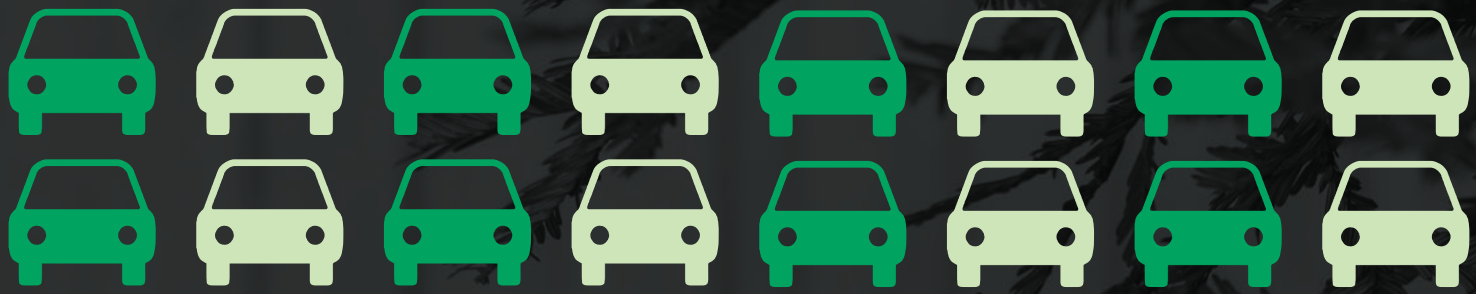
CUMULATIVE CARBON IMPACTS EQUAL

1.6 million

TREES TO BE PLANTED

1.8 million tonnes of CO_2 removed by 2040
4.6 million tonnes of CO_2 removed by 2050
BEYOND EMISSIONS OFFSETS

CO_2 SEQUESTRATION BEYOND EMISSIONS EQUIVALENT TO › **395,652** **1,015,217** › *CARS REMOVED FROM THE ROAD BY › **2040** **2050**



* Based on 2020 EPA Average car emits 4.6 metric tons per year. US EPA 2020: https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle

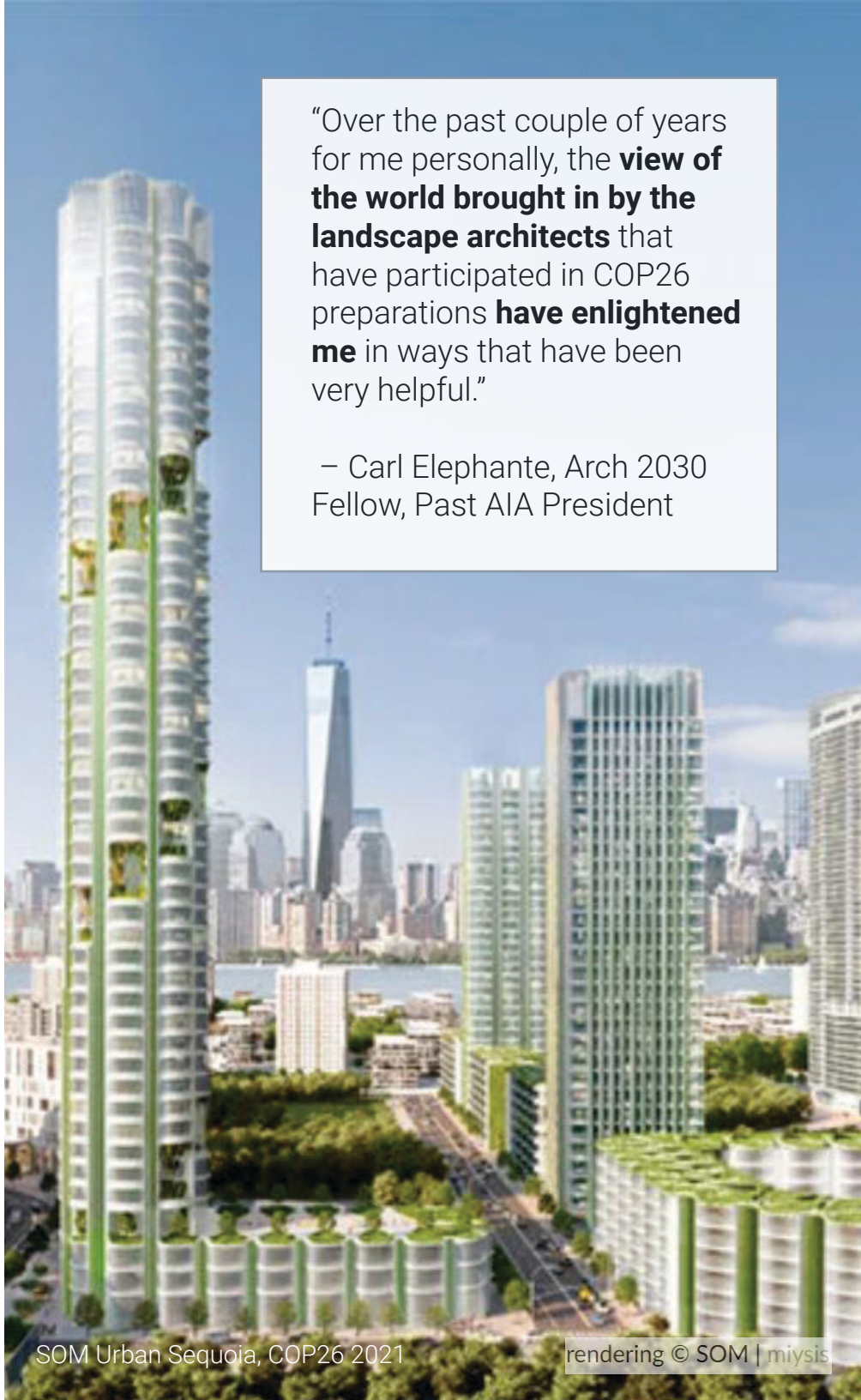
Advocacy

In 2021, planners, designers, and developers of the built environment around the world united to stand against climate change. At COP26, Architecture 2030 and Signatories (including the American Society of Landscape Architects (ASLA) and International Federation of Landscape Architects (IFLA) called upon governments to ramp up their 2030 emissions reduction targets, to limit planetary warming in line with the remaining global 1.5ºC carbon budget. The **Communiqué was signed by the 60 largest architecture, engineering and construction firms representing more than $300 billion in annual construction** spending and two dozen organizations including the ASLA, IFLA, and LAF, representing over one million professionals worldwide.

To reinforce the COP26 Communique, **IFLA, representing over 70,000 landscape architects in 77 nations** have committed to advance the UN Sustainable Developments Goals, attain global net zero carbon emissions by 2040, enhance capacity and resilience of liable cities and communities, advocate for climate justice and wellbeing, learn from cultural knowledge systems, and galvanize climate leadership. The **Climate Action Commitment** drafting process was led by Pamela Conrad, as the IFLA Climate Change Working Group Vice-Chair and presented at COP26 by Kotchakorn Voraakhom, IFLA's Climate Change Working Group Chair.

Climate Positive Design was recommended for all built environment practitioners at the Royal Institute of British Architects (RIBA) and Architects Declare pre-COP26 event, included within the corresponding Built for the Environment Report and was proud to be an **advisor to SOM's COP26 research presentation "Urban Sequoia"**which was live-streamed from the COP26 Climate Pledge Theatre.

In 2021, Pamela also **co-authored ASLA's Climate Action Now - Advocacy Guide** for Landscape Architecture Professionals and Green Business Certification Inc. **SITES Landscape Carbon pilot credit**.



"Over the past couple of years for me personally, the **view of the world brought in by the landscape architects** that have participated in COP26 preparations **have enlightened me** in ways that have been very helpful."

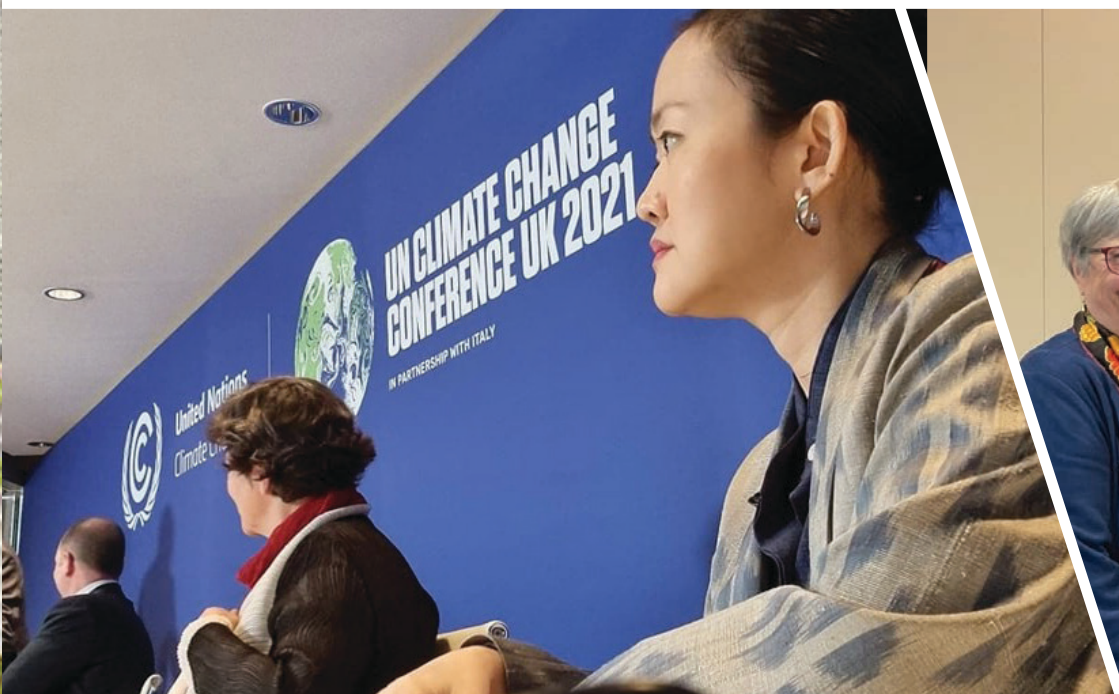
– Carl Elephante, Arch 2030 Fellow, Past AIA President

SOM Urban Sequoia, COP26 2021

rendering © SOM | miysis

BUILT ENVIRONMENT SUMMIT

28 - 29 October



Education and Awareness

While the underlying intent of the initiative is to reduce greenhouse gas emissions and increase carbon sequestration, **providing accessible educational information is the engine behind that impact.**

Academic study or test case project data is not included in the full carbon impact summary on page 7 and 8, however, the statistics shown to the right highlight the overall contribution towards increasing education and awareness around the globe.

TOTAL PROJECTS INCLUDING ACADEMIC/STUDY

3,626
PROJECTS LOGGED

105 COUNTRIES
393 UNIVERSITIES
758 COMPANIES
842 STUDENTS
1,761 CONTRIBUTORS

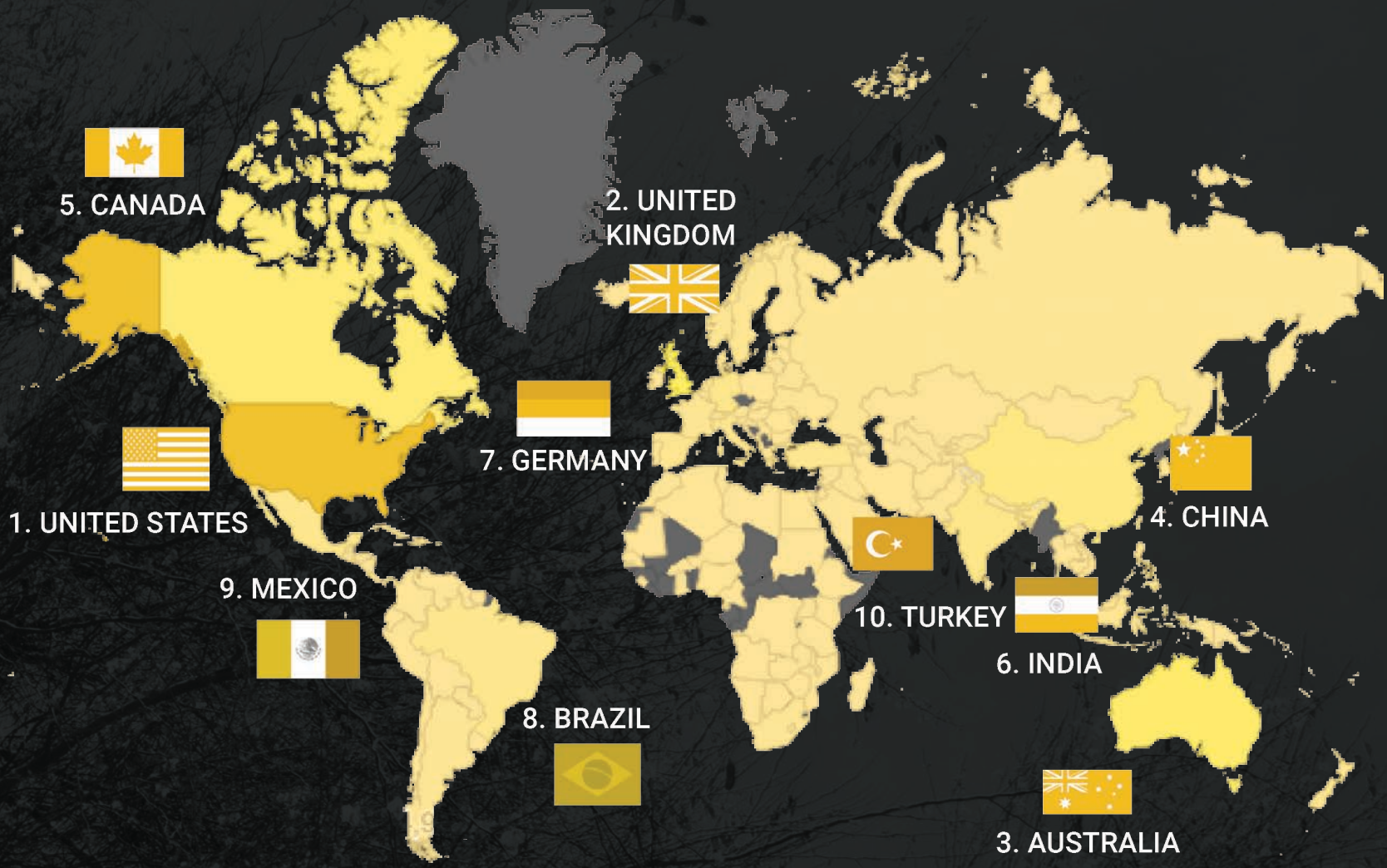
INCREASING AWARENESS

151,774
PAGE VIEWS

32,171
PEOPLE REACHED
VIA WEB RESOURCES

95
LECTURES

COUNTRIES WITH MOST USE OF WEBSITE RESOURCES



167 COUNTRIES REACHED

OUT OF 195 IN THE WORLD

2021 CPD Challenge Project Top Contributors

Climate Positive Design is **proud to acknowledge the year two top contributors** whose work is highlighted on the following pages.
Thank you to all that have supported the initiative to date.

"Sustainable landscapes like this create **resilient communities able to withstand and recover** from all types of human catastrophic events."

16

YEARS TO POSITIVE

SPACECOOP RIO_55, Madrid, Spain

Feature Project / AIM- The Center for Food & Agriculture and Marin Farmers Market

Firm	April Philips Design Works
Location	San Rafael, California
Client	Marin Civic Center
Team Members	April Philips Design Works, Sherwood Engineers & Gould Evans Architecture
Size	3 acres

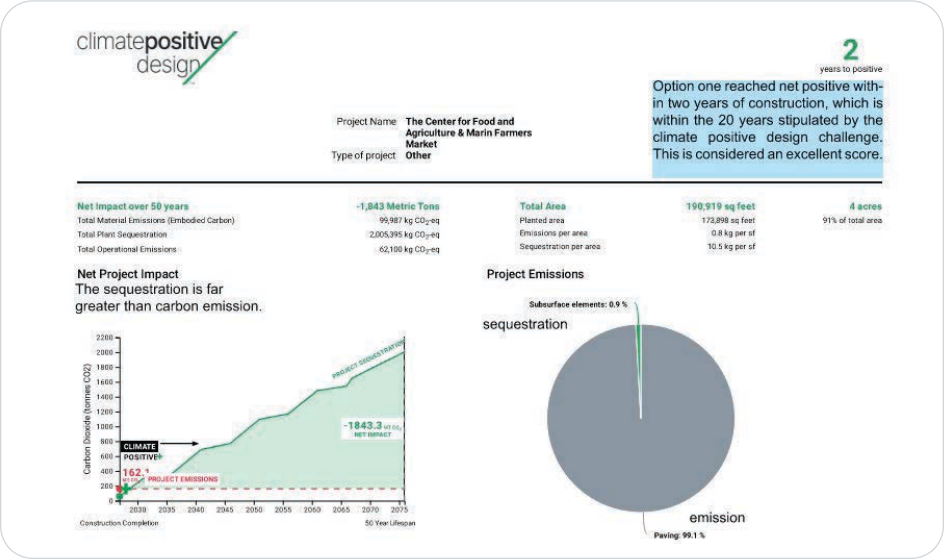
Project Approach

The Marin Farmers Market & Center for Food and Agriculture master plan vision is to advance climate adaptive solutions that draw down GHG and promote resilience. The site design vision is based on environmental sustainability and community resiliency.

The drawing down of carbon footprint strategies for this project have been endorsed by the Drawdown Marin Action plan. The Project Drawdown organization and local initiatives such as the Marin Carbon Farming project have begun to demonstrate the positive benefits of carbon sequestering strategies in the landscape in the fight to combat climate change.

To measure the climate positive impacts proposed in its regenerative based design approach, the AIM master plan design vision was put through the Climate Positive Design Challenge using the Pathfinder tool to calculate the projected carbon emissions of the project.

The Farmers Market and CFA master plan vision is identified in this climate positive design synopsis as Design Option 1, the vision design concept detailed in the Masterplan Phase 2 Summary Report dated July 20, 2020. This ultimate design vision proposes the highest level of sustainability and innovation possible for the project to become a positive role model showcasing regenerative agriculture & sustainable design for the community to learn from and a beacon for other projects to emulate. The team choose the most sustainable and least carbon emitting materials and strategies available to understand what the climate positive design score of the “north star” vision could be. With this approach, the score is currently at 2 years to positive.



"The drawing down of carbon footprint strategies for this project have been **endorsed by the Drawdown Marin Action plan**."

2

YEARS TO POSITIVE

Feature Project / Alameda Point - Depave Park

Firm	CMG Landscape Architecture
Location	Alameda, California
Client	Alameda Recreation and Parks Department
Team Members	CMG members below + Pamela Conrad, CBG
Size	14 acres

Kevin Conger

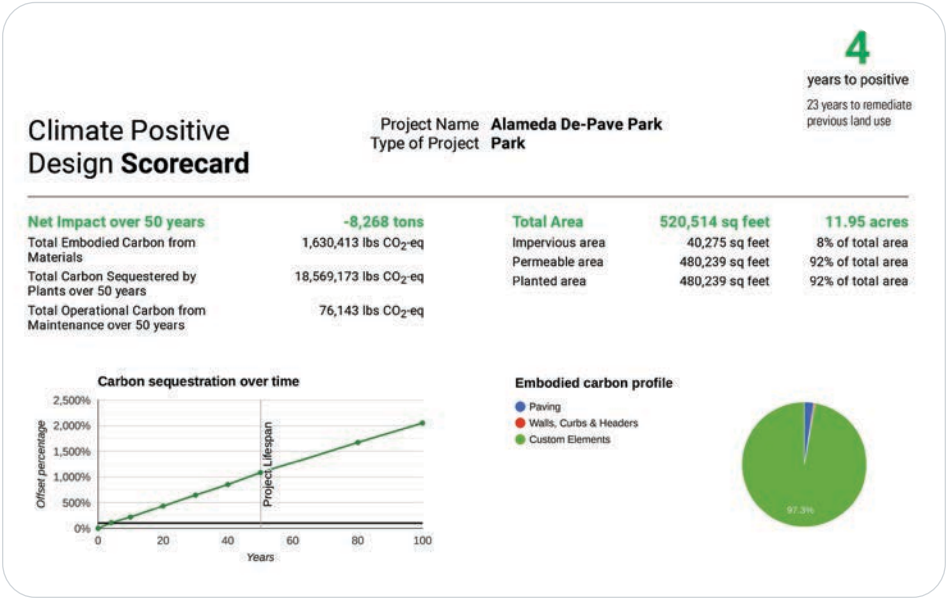
Sam Woodhams-Roberts

Arturo Fuentes -Ortiz

Project Approach

The vision for DePave Park transforms the concrete-paved naval tarmac into a thriving ecological park that adapts to future sea level rise by accepting the rising tides to create restored wetlands.

Through re-purposing materials, minimizing additional carbon emissions, and maximizing carbon sequestration, DePave Park is a new model for Climate Positive resilient landscapes. The Park's new design will offset its carbon footprint in 4 years and mitigate the carbon footprint of its original construction in less than 25 years, as opposed to the additional 220 years the current site would require to offset its carbon impact. By restoring nature and engaging the Bay, DePave Park will be an ecologically productive landscape for native wildlife and a recreational and educational resource for the community.



"Depave Park is a **new model for climate positive resilient landscapes.**"

4

YEARS TO POSITIVE

Feature Project / Victoria North – City River Park

Firm	Planit I.E. Limited
Location	North Manchester, United Kingdom
Client	Manchester City Council & Fart East Consortium (FEC)
Team Members	Pete Swift/ John Willerton / Anna Santini/ Alex Chairetaki.
Size	7 Parks within 390 acres

Pete Swift

John Willerton

Anna Santini

Project Approach

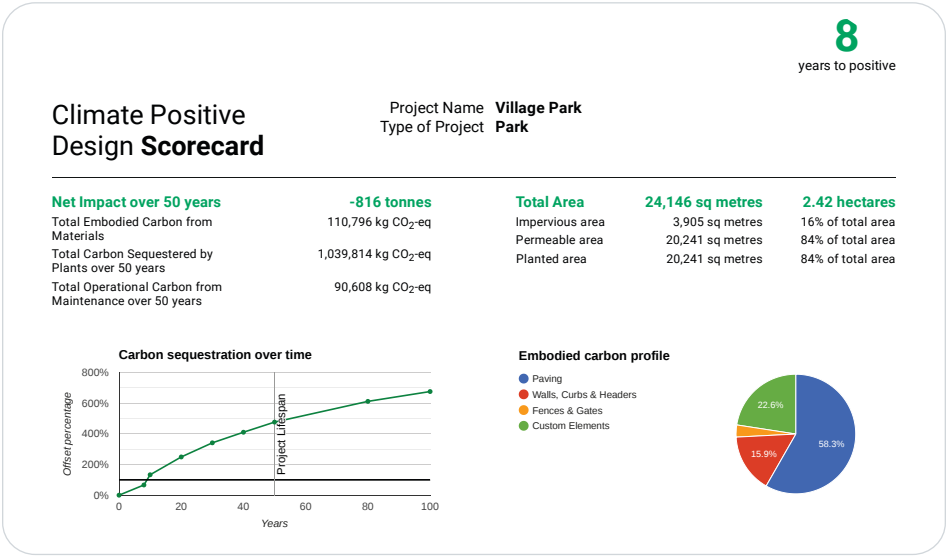
As part of the wider Victoria North Strategy, Planit were tasked with expanding the narrative, design and purpose for a new City River Park. This comprises 7 separate, but linked green spaces, that will form one of the largest new public parks to come forward in the city in the last 100 years.

The declared climate emergency has focused minds and brought attention to the contribution that green space can make to achieving carbon reductions, and this is where we were able to make full use of the Toolkit.

We found that simple messages made a lasting impression with the client – comparing the time to climate positive with the self-imposed deadline of 2038 for the City to achieve zero carbon became a key metric.

It also highlighted significant challenges in achieving it, as traditional approaches to park design and materiality quickly failed to meet the target. It became apparent that the appearance and feel of many of the proposed park spaces would need to change, and the client preconceptions adjusted. The simple interface of the toolkit allowed for 'on the fly' changes, made with the client during meetings, allowing them to be part of the process and to understand the implications of their decisions. A truly transparent process!

As part of our wider B-Corp objectives, we have tasked ourselves with understanding the value and impacts of the projects we do. The Toolkit has given us a tool to measure, evaluate and act on this, and to bring our clients and collaborators into this important conversation.



"Comparing **the time to climate positive became a key metric** ... and the **client preconceptions adjusted**."

8

YEARS TO POSITIVE

Feature Project / RIO55_urban wilderness

Firm	SPACECOOP
Location	Madrid, Spain
Client	Grupo Insur
Team Members	James Baybrooke, Luis Asencio , L35
Size	8,500 sm

James Braybrooke

Luis Asencio

+Team

During the project we learned however small a project it has the potential to create a space for mental restoration or relaxation away from the workplace. By designing a completely naturalistic landscape with landform sculpting, it offered us the chance to make a more diverse landscape with more potential for mix of private, semi-private, and open democratic places for social interaction or outdoor working. The natural wilderness exploded into life and after just one year the gardens were full of colour/textures/life evolving into the shaded “sensory” island seating areas that were planned, allowing users to almost immediately disconnect and reboot at a few steps from their office environment.

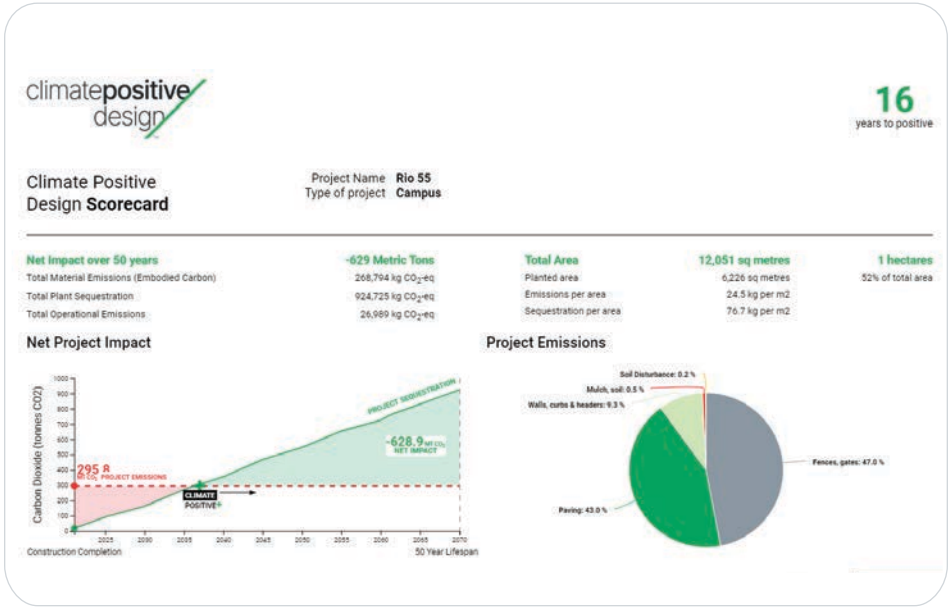
Sustainable landscapes like this create resilient communities able to withstand and recover from all types of human catastrophic events.

Project Approach

The client brief was also to help promote innovation, talent and creativity through best practice with a “low maintenance” and “water conservation” design baseline.

The site was a vacant inner city urban plot and our challenge to naturalise it within the brief’s economic constraints.

The most effective strategies the team pursued were to protect natural systems by using a diverse mix of drought tolerant adapted plant species, permeable paving materials and convincing the client of the importance of planting over parking slab (loading permitting) to improve building acclimatization wherever possible. Another successful strategy generated flexible open spaces for the offices at the same time equitable places for events/education/play etc. by other public.



"The most effective strategies were to **protect natural system**s by using a diverse mix of **drought tolerant adapted plant species** and **permeable paving** materials."

16

YEARS TO POSITIVE

Feature Project / Lewis H. Britton Middle School New Student Union

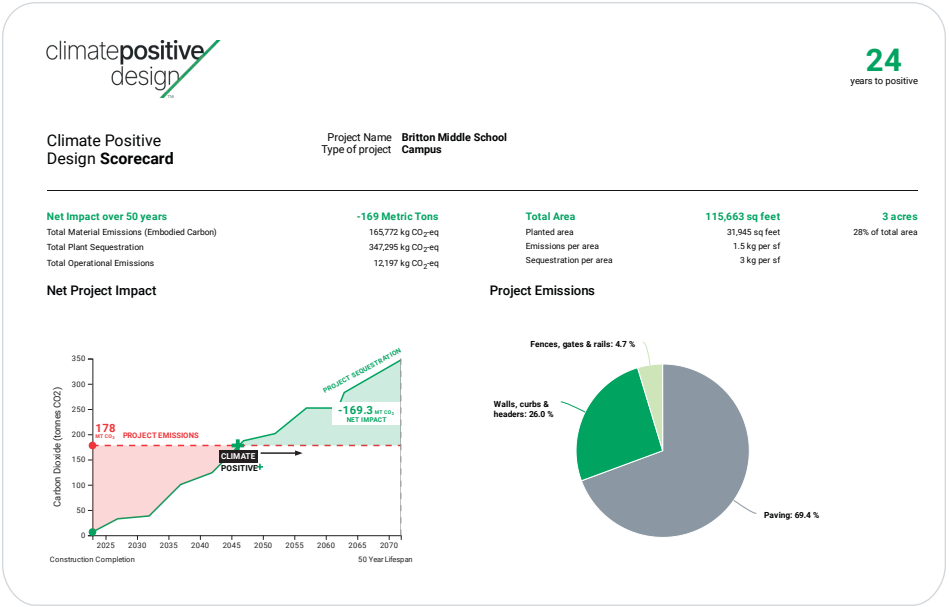
Firm	LPA Inc
Location	Morgan Hill, California
Client	Morgan Hill Unified School District
Team Members	Integrated Design Team: LPA
Size	3.4 acres

Project Approach

The New Student Union at Britton Middle School creates a visual and physical connection between the school and community. Seen as an important piece of civic infrastructure for Morgan Hill, the project team felt a responsibility to create a sustainable, long-term gathering and learning space for the students and community.

The Pathfinder app was an integral tool in the development of the site design. Periodically throughout each design phase, the team set goals and checked the carbon performance of the project and made necessary adjustments.

By integrating the tool into the design review process at each phase, the landscape architects were able to make informed decisions about site materials and the scale of the outdoor spaces, ultimately resulting in a 16-year reduction in how long until the project is carbon positive. K-12 projects in particular often have high demands for space and challenging budgets, which can make realizing performance goals a challenge. Learning to use the Climate Positive Design analysis as an integral part of the design process allowed the design team to meet the project's needs and performance goals.



"By **integrating the tool into the design review process at each phase**, the landscape architects were able to make informed decisions about site materials and the scale of the outdoor spaces, ultimately **resulting in a 16-year reduction to becoming climate positive**."

24

YEARS TO POSITIVE

Feature Project / DuPen Fountain Renovation

Firm	Swift Company LLC
Location	Seattle, Washington
Size	6,142 SQ FT

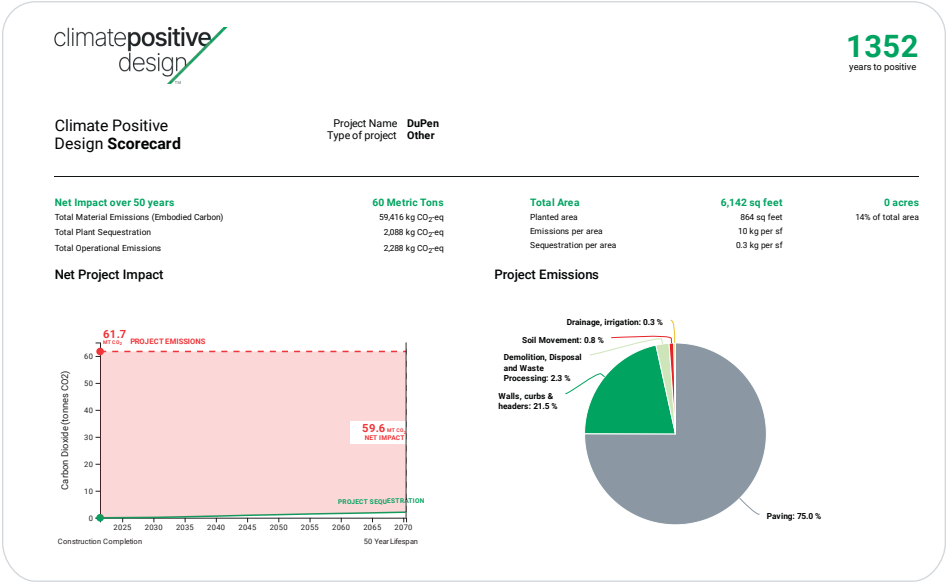
Project Approach

Swift Company used the Pathfinder tool to evaluate the carbon impact for the renovation of a beloved fountain, gaining a high-level understanding of the impact of a baseline replacement and the benefits of hardscape reductions in the final design.

The landmarked DuPen Fountain transformation of Everett DuPen's vision replaces the fully paved fountain with an ADA accessible spray jet plaza, providing opportunity to interact with DuPen' s sculptures. The western edge of the fountain is replaced by planting that provides evergreen and seasonal interest and 20% reduced hardscape. Demolition was limited to 70% and only includes area required by new underground systems. Existing boulders were salvaged for re-use and excavation material for the reservoir was used for backfill to create landform and reduce movement of materials.

Located in the western precinct of Seattle Center and adjacent to the Climate Pledge Arena, the DuPen Fountain is intensely used. The project maximizes the heavy pedestrian use of the Seattle Center campus while reducing the project footprint in the long-term. The calculation raises issues of additional off-sets and long-term operations budgets.

The complexity of this renovation didn't allow a full evaluation, however we were able to calculate the carbon impact for large-scale components of the project. Comparing the carbon impact of past and future allows conversations with the client and indicates the relative distance to becoming carbon neutral. This in and of itself is highly valuable. We are embedding this in our practice and as part of conversations with clients and communities.



"Comparing the carbon impact of past and future allows conversations with the client and indicates the relative distance to becoming carbon neutral. This in and of itself is highly valuable. **We are embedding this in our practice and as part of conversations with clients and communities**."

1352

YEARS TO POSITIVE

Statistics

PROJECT QUANTITY FOR THE FIRST TWO YEARS
- Total projects that submitted full details = 560

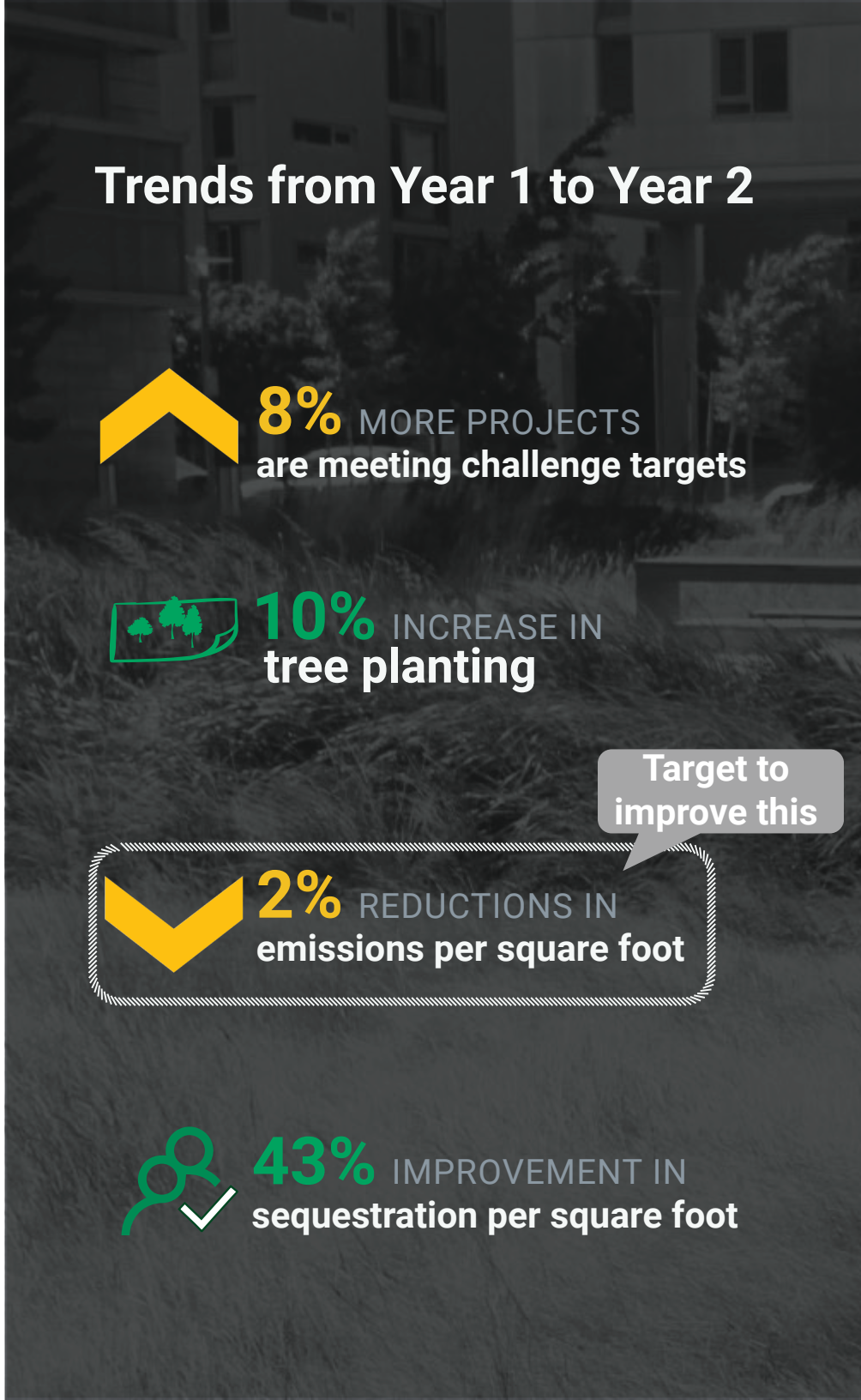
AREA
- Total area = 112,488 acres

30 YEAR IMPACTS (by 2050)
- Total embodied emissions in 30 years = 3.3 million tonnes
- Total operational emissions in 30 years = 730,000 tonnes
- Total emissions in 30 years = 4.03 million tonnes
- Total sequestration in 30 years = 8.7 million tonnes
- Total net in 30 years = 4.7 million tonnes
- **Sequester 2.1 x's more carbon than emitted in 30 years**

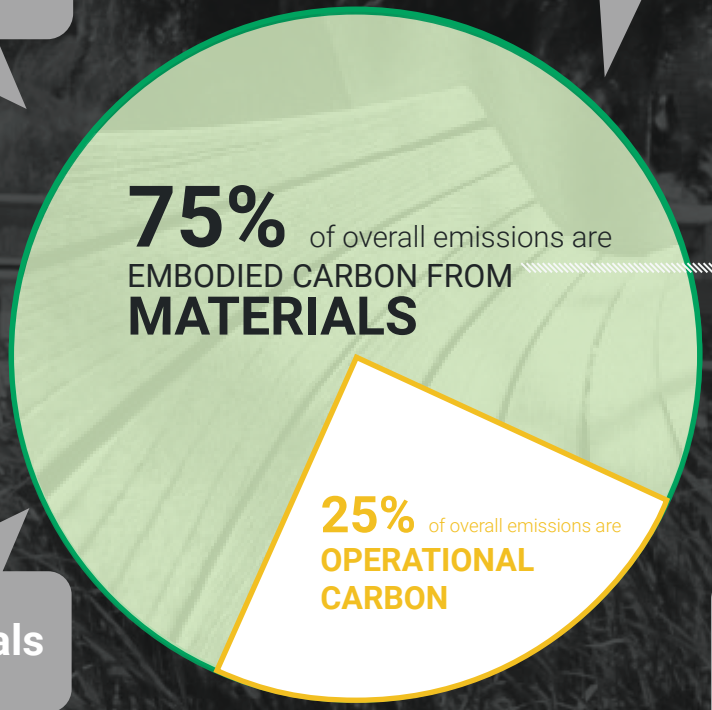
20 YEAR IMPACTS (by 2040)
- Total embodied emissions in 20 years = 3.3 million tonnes
- Total operational emissions in 20 years = 480,000 tonnes
- Total emissions in 20 years = 3.8 million tonnes
- Total sequestration in 20 years = 5.6 million tonnes
- Total net in 20 years = 1.8 million tonnes
- **Sequester 1.5 x's more carbon than emitted in 20 years**

CHALLENGE PERFORMANCE
- Median years to positive (YTP) for all projects = 17.5 years
- Median YTP for Parks = 16 years
- Median YTP for Plazas/Streets = 37 years

- Average emissions/sf = 4 lbs/CO2e
- Average sequestration/sf = 18 lbs/CO2e
- 4.5x's more sequestration than emissions based on average area/square foot basis



Project Performance and Actions



We need EPDs

Maximize cement substitutions

Use less

TARGET THIS

Use local materials

Maximize recycled content and reuse

24% of projects
ARE MEETING CHALLENGE TARGETS

Support

To maintain and improve the resources developed to date, CPD is seeking donations to support the following in 2022:

1. RESEARCH

- Collaborate with science based experts and academia to advance data on carbon sequestration
- Develop plant palettes to maximize carbon sequestration and co-benefits such as biodiversity and resilience
- Collect EPDs to expand embodied carbon of materials and operations

2. TOOLS

- Pathfinder Advancements
    - Incorporate more materials, plants and operations
    - Expand products and Environmental Product Declarations
    - Integrate with 3D multi-disciplinary tools

3. RESOURCES/GUIDANCE

- Evaluate Climate Positive Design Challenge Industry Impact Data
- Expand Design Toolkit/Palette
- Develop Industry Climate Action Implementation Plans
- Create and/or expand EPD Library

4. EDUCATION/COMMUNICATIONS

- Give lectures and workshops at universities, schools, conferences, firms and organizations
- Create educational and thought leadership editorials and media
- Collaborate with manufacturers and interdisciplinary organizations
- Integrate with rating programs and code standards

Many thanks to our supporters.

Climate Positive Design continues because of you.

To donate online, visit the GoFundMe page:
https://www.gofundme.com/f/climate-positive-design-initiative

or

To make a **tax deductible contribution**, donations can be made out to CPD's 501(c)3 fiscal sponsor: **2030, Inc. / Architecture 2030**
Please note **Climate Positive Design** in the memo line.

2030, Inc. /Architecture 2030
607 Cerrillos Road, Suite G
Santa Fe, NM 87505
USA

With inquiries, please contact:

Pamela Conrad
ClimatePositiveDesign@gmail.com
www.ClimatePositiveDesign.com
415-961-3784

climatepositive design