BEYOND NEUTRAL 2022 Annual Report

A DECLARATION from the

2022



A

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Cover Image: Mural hand painted by the Fearless Collective at the COP27 Egypt Youth Pavilion, which creates public art interventions with women. The second week of the conference opened with a focus on water, women and continued negotiations on 'loss and damage'. Climate Positive Design's mission is to have a

positive impact on climate change in the exterior built and natural environment.

By providing free and accessible tools, resources, and guidance.

Why?

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

Not only do those responsible for the design, construction, and maintenance of the exterior built environment share the responsibility of reducing those emissions, but through landscapes, we can actively take carbon dioxide out of the atmosphere. Through thoughtful design and measurement, projects remove more carbon than they emit while providing ecological, social, and economic co-benefits. They can become climate positive – simultaneously advancing resilient, biodiverse, and equitable communities 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 by the Landscape Architecture Foundation Fellowship for Innovation and Leadership. The initiative is grounded in the following:

Education, Advocacy, and Design

Pamela Conrad leads the initiative in collaboration with the following Advisory Partners and team members. All Contributors that log project impacts are listed on the website <u>www.ClimatePositiveDesign.com</u>

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."



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

RESEARCH & DESIGN









Jamie Jang

Kotchakorn Voraakhom

IFLA

Jose Alminiana

ASLA



Lisa Richmond

Architecture 2030

Kevin Conger

CMG













Kristen diStefano Atelier Ten

Prateek Jain Atelier Ten



Torey Carter-Conneen

ASLA

Erin McDade Vincent Martinez Architecture 2030

ADVISORY PARTNERS / COLLABORATORS

Katie Riddle

ASLA

Sarah Fitzgerald

ASLA

Architecture 2030

Jared Green

ASLA

Eustacia Brossart Architecture 2030 **Climate Positive Design** Deanna Lynn ASLA

Barbara Deutsch

LAF

Chris Guillard

CMG

Greg Barger CMG

Kate Lenahan CMG





Claire Martin AILA



Dilraj Watson



TECHNOLOGY



Vaughn Rinner

ASLA





Diane Jones Allen

ASLA



Larry Lague















Edan Weis

Tyler Maisano

Cameron Nimmo

Antoinette Marty

Catapult

Willett Moss CMG

Anne Donnard

Emerson Blue

Chris Hardy

ASLA/LAF/Sasaki









CMG

4









Martin O'Dea

AILA











Kira Gould Kira Gould CONNECT

Paulina Tran

CMG

Jamie Yousten





Hope Parnham







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 carbon dioxide (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:

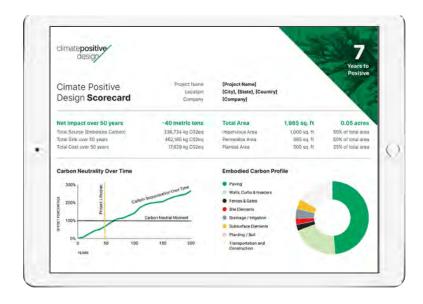
- **5 years to positive** for parks, residential, on-structure, mixed-use or campus developments
- 20 years to positive for streetscapes or plazas

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



To meet the goals of the Challenge users log projects into the free, webbased 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 the 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.



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 COP27 and the 2022 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 three years provide a promising glimpse into the potential impact of this initiative. As recorded, the impact of the projects logged within the first three years show:

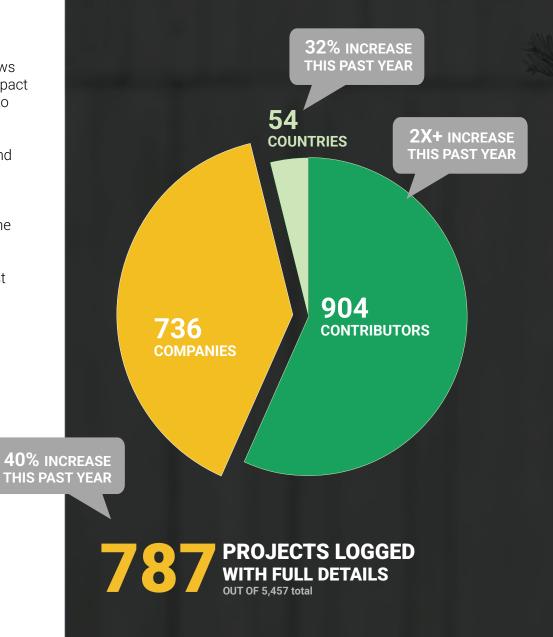
Impact by 2040

2.3 million tonnes of CO2 sequestered beyond offsetting project emissions

Impact by 2050

5.2 million tonnes of CO2 sequestered beyond offsetting project emissions

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



CUMULATIVE CARBON IMPACTS EQUAL

1.7 million TREES TO BE PLANTED

2.3 million tonnes of CO2 removed by 2040 5.2 million tonnes of CO2 removed by 2050 BEYOND EMISSIONS OFFSETS

CO2 SEQUESTRATION BEYOND EMISSIONS EQUIVALENT TO 495,652 2,419,565

*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 2022, planners, designers, and policy makers associated with the built environment around the world united to stand against climate change. At COP27, Architecture 2030, the International Federation of Landscape Architects (IFLA), the American Society of Landscape Architects (ASLA), Bellona Europa and associated organizations called upon governments to ramp up their 2030 emissions reduction targets, to limit planetary warming in line with the remaining global 1.5°C carbon budget. In particular, the Architecture 2030 event focused on solutions by and for the Global South, led by Lisa Richmond, Architecture 2030 Senior Fellow.

To reinforce the 2021 COP26 Communique, and IFLA Climate Action Commitment, representing over 70,000 landscape architects in 77 nations, **the Australian Institute of Landscape Architects and ASLA have developed climate action plans** committed to advance the UN Sustainable Developments Goals, attain zero 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 **ASLA Climate Action Plan** drafting process was led by Pamela Conrad and as an ASLA delegate it was **presented at COP27, in addition to Embodied Carbon reductions with Bellona Europa and Nature-Based Solutions events** in the Thailand Pavilion with Kotchakorn Voraakhom, IFLA's Climate Change Working Group Chair.

ASLA's Climate Action Plan was unveiled by ASLA CEO Torey Carter-Conneen **in San Francisco, California** at the annual ASLA conference. The **Climate Action Plan** and member's **Field Guide** to taking climate action is now available free and open to the public. The Task Force included ASLA members Vaughn Rinner, Sarah Fitzgerald, Diane Jones Allen, and Jose Alminiana.

Both climate action plans can be downloaded here: AILA: <u>https://www.aila.org.au/Web/Web/Values/Climate-Positive-Design.aspx</u> ASLA: <u>https://www.asla.org/climateactionplan.aspx</u>





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

5,457

PROJECTS LOGGED



INCREASING AWARENESS

195,655 PAGE VIEWS

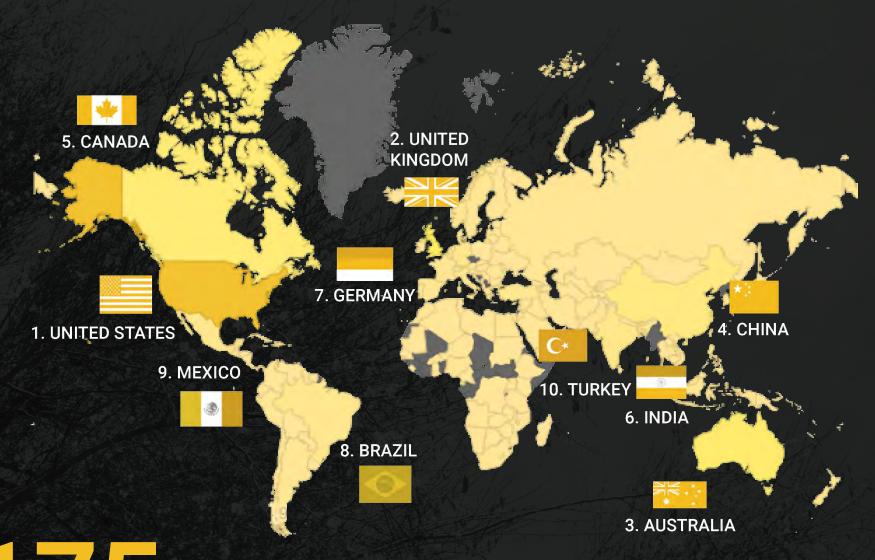




44,504 **PEOPLE REACHED VIA WEB RESOURCES**

112 LECTURES

COUNTRIES WITH MOST USE OF WEBSITE RESOURCES





Education

In 2022, Pamela Conrad was selected as one of nine fellows to be welcomed into the **Harvard Graduate School of Design Loeb Fellowship**. The Loeb Fellowship is designed for civic leaders, journalists, architects, technologists, urban planners and designers, activists, landscape architects, policy makers, and public artists who come from around the world to the Harvard Graduate School of Design (GSD) with **one purpose: to make the world a better place for all.**

During this time, Conrad has served as a studio critic and lecturer for Harvard, Penn State and UVA, MIT, and led the **Climate Positive Design Workshop** for the GSD January-Term. Students gained practical handson experience in designing low-carbon resilience communities with the benefits of health, equity and biodiversity, while learning how to apply the Pathfinder tool to their projects.

Pamela also served as a mentor to Laura Robinson, a **Climate Justice Design Fellowship** (CDJF) awardee, and guest critic to reviews for the entire CDJF fellow cohort. Laura's project focused on developing a tool to help implement tree planting in underserved schools and her final product as well as the other fellows' can be found online here:

https://climatefellowship.org







2022 CPD Challenge Project Top Contributors

Climate Positive Design is **proud to acknowledge the 2022 top contributors** whose work is highlighted on the following pages. Thank you to all that have supported the initiative to date.



"Green roofs reduce the load on drains, improve the thermal insulation of buildings, and serve as a new home for urban flora and fauna. In addition, green roofs can help combat the urban heat island effect as they increase the roof's albedo. Our team decided to create an open green roof laboratory to evaluate the impact green roofs have on the climate in their location."

> OPEN LAB Sayan group and Landscape Engineers Guild Team

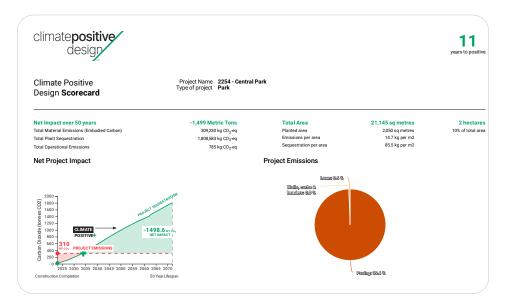
Feature Project / Liverpool Waters Central Park

Firm	Planit-IE Limited
Location	Liverpool, United Kingdom
Client	Peel L&P
Team Members	Danny Marsh, Sean Swarbrick, Emma Thompson, Jonny Helm
Size	5 acres

Project Approach

As part of the Liverpool Waters Estate, Central Park is the Jewell in the crown, not only of the Central Docks Neighbourhood, but the whole 60 ha Liverpool Waters Development. It will be the first park to be built within Liverpool in over 100 years. Within a brownfield industrial dockland environment and on the site of a former power station, Central Park will be the green heart of a mixed use development serving as an incredibly important asset not only for the new community in which it sits but to the wider Liverpool region and in tackling the climate emergency. The approach to the Park design were in line with both the City of Liverpool's response to the Climate Emergency and also Peel's own internal responses to sustainable developments with key goals linked to Water, Biodiversity, Softworks and Hardworks with challenging targets assigned to each strategy.

The Pathfinder and Toolkit allowed us to assess our design at RIBA Stage 2 Concept level. It challenged our approach to the design and the specification of hard materials and the balance between hard and soft. The tool also provided further suggestions to improve and refine the design and we were able to reduce the timeframe to carbon positive from 22 years to 11 years and align it with Liverpool's climate emergency goals. The scorecards have tracked the project from existing site and traditional design approach through to a more climate considered design and have been a useful method of communicating change. We are constantly challenged to be sustainable and responsive to the environment we live and work in. As Planit works towards its re-accreditation as a BCorp, we find ourselves considering every aspect of our business and how we must move from simply 'doing less harm' to adopting a mindset of leaving the world better than we found it. Finding the right tools, such as the Climate Positive Pathfinder and Toolkit, that can support us to be more responsible stewards on the land, and to measure our impacts upon it is a critical part of that process.



"The tool also provided further suggestions to improve and refine the design and **we were able to reduce the timeframe to climate positive from 22 years to 11 years** and align it with Liverpool's climate emergency goals."



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Feature Project / UPRC Queenswood

3 acres

Firm	Janet Rosenberg & Studio Inc.
Location	Ottawa, Ontario. Canada
Team Members	Wayne Swanton, BLA, OALA, CSLA, ASLA,
	Managing Principal, Landscape Architect
	Colin Berman, OALA, CSLA, Principal, Landscape
	Architect. Rob McIntosh, BES, MLA, Senior Project
	Leader

Size





Colin Berman



Wayne Swanton

Rc

Rob McIntosh

Project Approach

Queenswood Commons is a residential community being built around the existing Queenswood United Church. The project site is currently comprised of surface parking lots and large areas of lawn. With the development of homes on the site comes the opportunity to rethink the relationship of the church to its surroundings, but also to create a number of distinct landscaped spaces around the site. The landscape approach presents a contemporary and climate positive take on how a suburban community can utilize landscape design to improve site sustainability and to reduce carbon footprints.

This project had an interesting arc in our office, because the concept was first developed without the use of Pathfinder. As our studio began to use Pathfinder for more projects, we determined that Queenswood was an ideal candidate for analysis as we had a willing client who was open to alternative design approaches,

because of their interest in pursing a broad sustainability program. The most effective strategy to reduce the carbon inputs on this project was to minimize the use of concrete for paving (both cast in place and unit pavers), replacing as much as possible with stabilized crushed stone and using super-pave asphalt in place of typical asphalt. This strategy had a dramatic impact on reducing the embodied carbon inputs. Additionally, the use of a woonerf style streetscape has allowed for the reduction of paved area through the creation of shared spaces. We were also able to increase the sequestration capacity by eliminating lawn in favor of meadows. These naturalized planting areas also minimize maintenance emissions. In the large areas of meadow, we overplanted with multi-stem trees to further increase sequestration.

We were proud with the results we achieved on this project and are excited to continue to apply a carbon/sequestration lens to our design work. As we use the software for more projects, we continue to refine how we present our findings to convince our clients of the impact of our design choices as landscape architects and developers of land.



"Our initial analysis returned a 159-year period to return to positive, which was higher than we were expecting for a design that we thought was progressive. From working with Pathfinder on several other projects, we know there was significant room for improvement. A return to the drawing board – now with a laser-focus on embodied carbon and sequestration capacity – **yielded a significant improvement to a 26-year period to return to positive**."



YEARS TO POSITIVE

Feature Project / Pacific Plaza

Firm	SWA Group
Location	Dallas, Texas
Client	Parks For Downtown Dallas/ Dallas Park and
	Recreation
Size	8,500 sm
Team Members	Landscape Design team: Chuck McDaniel, Andy
	Harcar, Amanda Kronk, Rob Rider, Yuan Ren, Taylor
	Tidwell (SWA Dallas)
	Other Consultant Team Members: HKS (Line Stu
	dio) (pavilion), Brockette Davis Drake (structural),
	Salcedo Group Inc.(civil), Kimley-Horn(traffic),
	Cardno (sub surface utilities), Scott Oldner Lighting
	Design (lighting)



Chuck McDaniel

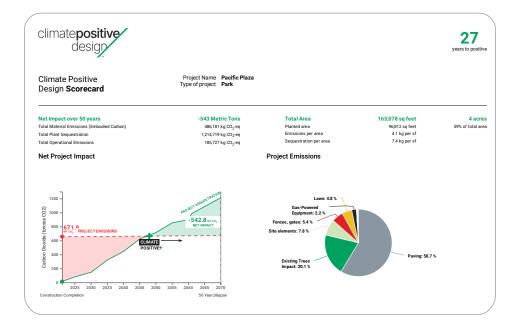
Project Approach

At the request of the client, a non-profit, SWA completed a carbon analysis for the already built project Pacific Plaza between the Dallas office and XL research and innovation Lab. The downtown site incorporated two parcels, a former surface parking lot, and 0.4 acre Aston Park, the site of 23 mature live oak trees. Completed in 2019, Pacific Plaza was the first of an ambitious park initiative spearheaded by Parks for Downtown Dallas in a public private partnership with the City of Dallas.

There were three main takeaways from this quantitative analysis that SWA learned could apply to other sites. The careful

preservation of 23 mature trees added greatly to the positive climate outcomes. Conversely, in terms of construction and maintenance, the most carbon was generated/emitted by removing other medium sized existing trees. It became clear that reducing the removal of trees and the preservation of mature trees was one of the main areas of leverage for carbon over a 50-year lifespan.

Secondly, paving was the largest carbon emitter, making up almost 60% of project emissions. Any reduction in concrete or stone paving would have lowered emissions due to the energy intensity of cement production, subslab, and rebar in concrete and the transportation costs for natural stone. And lastly, the project did have a generous amount of softscape for a plaza, however much of the area was lawn. Although a green, living material, mown lawns are net carbon emitters due to maintenance requirements over their lifetime. A University of Texas at Arlington team followed up with a larger study encompassing all five Parks for Downtown Dallas, once substantially complete.



"Using construction document area takeoffs and a custom SWA spreadsheet built to integrate with Pathfinder, the team could determine that; 1) in 27 years, the project would be climate positive; 2) It came close to the target for plazas; and 3) After 50 years, the project will have sequestered 543 metric tons of CO2. This is the equivalent of the lifetime emissions of 10 passenger vehicles."

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TADA DRAMAN DAY-OF PERSONS

NAMES AND TRACK ADDRESS ADDRESS

INCOME DESCRIPTION OF

NAMES OF TAXABLE PARTY OF

YEARS TO POSITIVE

Feature Project / Tracy Multi-Generational Recreation Center

Firm Location Client/Team Size LPA Design Studios Tracy, California City of Tracy 14.62 acres





Andrew Wickham

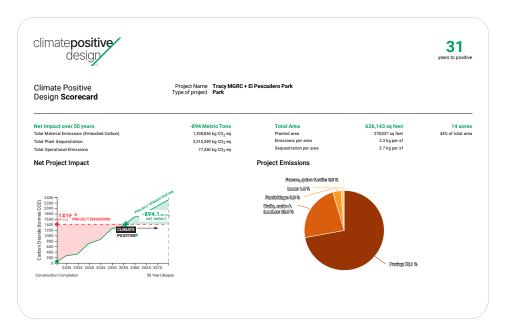


Huezo Kenya

Gertler Rocio

Project Approach

Very early in the process, the City of Tracy challenged the design team to prioritize a high amount of performance goals for the project: the building was to be net zero energy and designed to LEED Platinum, the park was to preserve as much of the existing mature canopy as possible, reduce irrigation demand, manage regional stormwater flows as well as local run-off, and be a carbon sink for the community. The City also identified a program-driven refurbishment of the existing underutilized park that included a new skatepark, dog park, event pavilion, basketball court, splash pad, triple the existing parking, and nearly a mile of new walkways. In the initial stages of design, it became evident to the design team that the program was driving a large amount of carbon intensive hardscape requirements. Using an iterative approach, we were able to design, calculate the carbon footprint, adjust, and repeat. The design team is still pushing for a better outcome, but as of the end of schematic design, the park design will be climate positive in 31 years. Given the amount of new infrastructure/program and realities of durability and maintenance requirements for this type of project, we feel this is a great start. As we further use the Pathfinder tool on this and other projects, it's becoming clear to us that the challenge in meeting our climate goals lay somewhere in the nexus between program needs, maintenance capabilities, client goals, and budget.



"In the initial stages of design, it became evident to the design team that the program was driving a large amount of carbon intensive hardscape requirements. Using an iterative approach, we were able to design, calculate the carbon footprint, adjust, and repeat."

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YEARS TO POSITIVE

Feature Project / Atlanta Beltline Westside Extension

Firm	CMG Landscape Architecture
Location	Atlanta, Georgia
Client	Atlanta Beltline Inc, Alta Planning + Design
Team Members	Pamela Conrad, Kate Lenahan
Size	4.74 acres





Pamela Conrad

Kate Lenahan

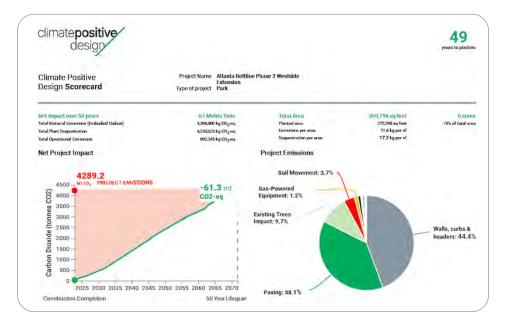
Project Approach

As part of the team selection process, Atlanta Beltline Inc. made measuring the climate performance of their future work a priority. CMG joined the team to help guide the design of the current phase, by conducting baseline analysis on a prior completed trail portion, and evaluating and informing the current project performance and design every step of the way.

The project goals were to maintain the established character of the 22 mile long Beltline while improving its carbon impact through refinement of materials selection and strategies. Through the process, the project improved from initially taking 127 years reduced to 49 years to offset its own carbon footprint (61% reduction). Project emissions were reduced by 22% and sequestration improved by 84% - an overall net performance improvement of 106% and achieving the maximum SITES credits. This was accomplished by planting and paving recommendations which were integrated at each stage of design.

With the client as the champion for climate performance, not only was this project improved, but the team was able to catalyze changes to the municipal transportation agency concrete standard requirements for cement substitution allowances. In addition, over 80 new elements were added to the Pathfinder app to support expanded free and accessible resources for all wanting to have a positive impact to climate change on their projects.

The current project performance was improved and will be implemented in future phases that will complete the overall urban trail system. Throughout the duration the team managed an agile, integrated approach to measure and improve performance that could be directly integrated into the design. Clear recommendations, analysis, charts and graphics aided the process.



"As part of the team selection, Atlanta Beltline Inc. made measuring the climate performance of their future work a priority. Through the process, the project improved from initially taking 127 years reduced to 49 years to offset its own carbon footprint."



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Statistics

PROJECT QUANTITY FOR THE FIRST THREE YEARS

Total projects that submitted full details = 787

AREA

• Total area = 544,077 acres

IMPACTS BY 2050 (~30 year impacts)

- Total embodied emissions in 30 years = 3.6 million tonnes
- Total operational emissions in 30 years = 778,000 tonnes
- Total emissions in 30 years = 4.62 million tonnes
- Total sequestration in 30 years = 9.9 million tonnes
- Total net in 30 years = 11.13 million tonnes
- Sequester 2.2 x's more carbon than emitted by 2050

IMPACTS BY 2040 (~20 year impacts)

- Total embodied emissions in 20 years = 3.9 million tonnes
- Total operational emissions in 20 years = 520,000 tonnes
- Total emissions in 20 years = 4.3 million tonnes
- Total sequestration in 20 years = 6.6 million tonnes
- Total net in 20 years = 2.3 million tonnes
- Sequester 1.5 x's more carbon than emitted by 2040

CHALLENGE PERFORMANCE

- Median years to positive (YTP) for all projects = 18 years
- Median YTP for Parks = 15 years
- Median YTP for Plazas/Streets = 59 years
- Average emissions/sf = 4.7 lbs/CO2e
- Average sequestration/sf = 14.6 lbs/CO2e
- 3.1x's more sequestration than emissions based on average area/square foot basis

Trends from Year 1+2 to Year 3

1% MORE PROJECTS are meeting challenge targets

3.5% INCREASE IN tree planting

10% IMPROVEMENT THIS PAST YEAR!



10% REDUCTION IN sequestration per square foot

(likely due to 43% increase in prior years and leveling out with realistic performance)

Project Performance and Actions

Maximize cement substitutions We need EPDs

Use less

75% of overall emissions are EMBODIED CARBON FROM MATERIALS

[∞] TARGET THIS

Use local materials

25% of overall emissions are OPERATIONAL EMISSIONS

Maximize recycled content and reuse

25% 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 2023:

1. RESEARCH

- Expand research for metric setting knowledge of co-benefits including water conservation, biodiversity, equity, community health and resilience
- Collect EPDs to expand embodied carbon of materials and operations

2. TOOLS

- Pathfinder Advancements
 - Incorporate more materials, plants and operations
 - Expand to include co-benefits such as biodiversity, equity, water conservation, community health and resilience
 - Expand products and Environmental Product Declarations
 - Integrate with 3D multi-disciplinary tools and integrate/align with other tools in related disciplines

3. RESOURCES/GUIDANCE

- Evaluate Climate Positive Design Challenge Industry Impact Data
- Develop Climate and Biodiversity Positive Commitment program
- Support the expansion of the EC3 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

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