



Climate Positive Design with Pamela Conrad

Live webinar 12/12/2019 at 1pm ET

Question and Answer session

Attendee question:	Pamela Conrad response:
<p>Could the app be updated to show construction processes? Additionally, it seems like trees have a carbon footprint (fertilizers that went into growing, transport costs from nursery, etc), how does this get incorporated into app in the future?</p>	<p>Yes, it could be. Right now construction processes are covered in the contingency as it is estimated as a smaller amount of emissions than actual embodied carbon of materials.</p>
<p>Thanks. Thanks so much for doing all the work involved in this. One critical issue is how we convince our clients to do this. Learning how to make the case to clients so we can truly implement this would also be invaluable info to have- and share. As I'm sure the group has suggestions from their experiences. Perhaps you could solicit people ideas and then have a downloadable doc or another class.</p>	<p>Would be great for people to add their experiences for everybody to learn from on the LinkedIn Forum page: https://www.linkedin.com/company/climate-positive-design-forum/</p>

<p>What are some ways that CMG is trying to reduce it's footprint within the office? Sourcing of office materials/supplies, plant-based office meals, etc. Does it become company policy or "recommendations?"</p>	<p>We recently improved our office standards through the California Certified Green Business Network: https://greenbusinessca.org/ . We've been offsetting our travel (www.climatestewards.org) cutting back our meat consumption, buying snacks with less packaging, started brewing our own beer! (less cans/bottles I suppose) and working to go digital/use less paper and buy less STUFF in general. We are also currently finalizing our B-Corp certification.</p>
<p>Does the app provide a monetary/economic value based off the CO2 sequestration? It would be useful to demonstrate traditional design to climate positive design.</p>	<p>No, not yet, but good idea.</p>
<p>Is there a section for demo? The carbon cost of products being removed/ recycled?</p>	<p>Not currently, but on the list to add! This is currently covered by the contingency.</p>
<p>Can a project in a greenfield site be climate positive in 20 years?</p>	<p>Yes, potentially.</p>
<p>Does the initial site selection take into account the efficiency of the context (e.g. a suburban office park has induced traffic demand versus a site like the TransAmerica Tower is well served by transit)</p>	<p>No, but we should be doing that as a matter of best practices. We must densify our cities to sustain life on this planet!</p>

<p>Is there a way to compare the new design to the way the site sequesters carbon currently? Do you have to make a project for the base condition of the project area and then make a new project for the design to compare how the changes to the land truly stack up?</p>	<p>You could do an existing conditions analysis using the app. Just try to note "existing condition" in the name and it will get excluded from the total impact stats. I hope to add a separate category for this.</p>
<p>Can you provide any info on what (if any) cement alternatives work best in cold, northern climates, with freeze thaw considerations? How might they hold up?</p>	<p>I can't unfortunately. Maybe someone on the LinkedIn Forum could help?</p>
<p>Are all numbers put in additive? For example, the wetland slider, is that the sqft added or the existing/remaining?</p>	<p>Yes, additive, not existing.</p>
<p>Not all plants are equal - can the plant info be modified to include those plants that sequester more carbon than others eg. "spekboom"?</p>	<p>That's the dream! BUT ... there are millions of plant species. Right now its set up to get the biggest bang for the buck. Planting more has more impact than planting certain species. For detailed tree species sequestration rates, you can go to iTree.</p>
<p>If streetscapes and plazas take longer to be carbon neutral and soils are where sequestration occurs, have there been studies or attempts to add more organics to structural soils to increase the carbon storage?</p>	<p>Yes. Check out the Marin Carbon Project - it's fascinating and hugely impactful!</p>
<p>Could you make Climate Positive Design into a non-profit entity, so you are not limited to donations through gofundme.com?</p>	<p>I was hoping to work with a non-profit to make that possible, but that recently fell through so I might need to create a non-profit now. Downside is that it is expensive to set up and a lot of work! But, might be the path forward.</p>

<p>Can you add another calculator for succulents and cacti? Or what category would you put those in otherwise?</p>	<p>Would love to! Do you know where we could find those sequestration rates?</p>
<p>Fabulous work! Thank you!</p>	<p>Thank you for joining!</p>
<p>Is there an option to somehow add a building's carbon footprint to it as well?</p>	<p>It's on the list. Turns out the map feature used won't allow it, so it would have to be re-built with another platform.</p>
<p>Is there an option to add a type of site (greenfield, brown field) carbon sequestration value, so you can get a better picture of if the site should just be left alone or should be developed?</p>	<p>Great idea. Will try to get in there.</p>
<p>It would be great to see this tool supplemented with something that would measure the value of the existing site (prior to construction) against the proposed design. So in our example: value the sequestration potential of the parking lot vs our park design.</p>	<p>You could do an existing conditions analysis using the app. Just try to note "existing condition" in the name and it will get excluded from the total impact stats. I hope to add a separate category for this.</p>
<p>What does the model assume as a starting point for a project. In other words, are there modules for determining impact/credit for demolition, such as reducing pavement area?</p>	<p>The model assumes the starting point from design through construction in detail. Demo is accounted for in contingency currently.</p>
<p>for CMG project examples: what are time-scale considered when quantifying emission or sequestration?</p>	<p>Industry standards are set at 50 years for a project lifespan. This is to align with other performance metrics like the Living Building Challenge. However, we all know landscapes might not last that long and we have a short timeframe right now to make a difference.</p>

<p>do you (pamela) see the primary advantage of the calculator more as a communication tool or design tool? and if equally/ both, who are best users/ advocates (besides LAs)?</p>	<p>It's a starting point for both. Going forward we need our clients, cities/municipalities, related disciplines (architecture/engineering etc.) to start expecting/asking this of us. Once they are informed, it will be a lot easier for us to raise the bar for our performance standards.</p>
<p>With the Operational Costs, I saw a "4x" figure. Please explain</p>	<p>That means there are four different options in the drop down menu.</p>
<p>Do you find that this kind of "numbers designing" shown in the app works as a "start point" for the design process, or would this app be used more like the designer uses estimates for dollars, meaning after initial design</p>	<p>This should be used throughout the design process - updating at mid-points and end of each phase, constantly being aware of decisions made and communicating those impacts to the team.</p>
<p>How much money would you like donated to achieve ALL of what else this could be? Will, you, Pamela, or your firm, keep improving this app?</p>	<p>I have estimated the need of \$250k/year to make improvements and keep up the effort (education, communications, etc.) I will make improvements with funds received (through donations, grants etc.), and that's what I have done to date. But the potential is only limited by funding at this point in time. And, I would like to keep this free of charge so it can have the greatest global impact possible.</p>
<p>will you be able to make your slides available to landscape architects to help educate the public, not just clients and prospects, but also agencies, schools, politicians, public officials to promote the profession??</p>	<p>Yes - please reach out directly if the slides are useful to you. The recorded webinar will also be online available after, there is a video on the website, and I (as well as other colleagues) are constantly giving talks at universities, conferences, webinars etc. The goal is to get the word out! Open to any other ideas. And YES with this data, we should be able to elevate our role to higher levels of politicians, public officials, decision makers to have a voice in this conversation.</p>

<p>Drop in [suggestions] where?</p>	<p>Here's a link to the "Suggestion Box" on the website: https://climatepositivedesign.com/have-a-suggestion/</p>
<p>Thank you for the excellent presentation and work on the Pathfinder App! This is exciting--just wondering if the calculation for Years to Positive on streetscapes need to include the asphalt on the road or just focussed on paved boulevards and medians?</p>	<p>Typically it has been limited to the landscape architect scope, but does not need to be that way. Let's work with civil engineers to include their scope to and look more holistically at sites.</p>
<p>How can we account for life cycle tradeoffs- materials that have lower embodied carbon but need to be replaced sooner?</p>	<p>Good question. The reality is that we have a time sensitive situation on our hands. We need to reduce carbon emissions and increase sequestration as much as possible in the next ten years. That may mean that we don't select stone that has a longer lifespan, but smaller amount of carbon emitted up front.</p>
<p>Is there a way to compare costs for the different design solutions? To see if the overall project increases or decreases in costs?</p>	<p>It does not currently include costs, but that could be an added feature.</p>
<p>My cost comparison question is an upfront cost question - is there a way to compare construction costs for different solutions to see if the climate positive solution is cost effective or more expensive?</p>	<p>It does not currently include costs, but that could be an added feature.</p>
<p>It's great to suggest taking cars off the road but what alternatives will people have to get to work etc? Rail? What climate positive calculator can estimate rail?</p>	<p>Good point. Yes, we need more public transportation to stop driving. I am not aware of a calculator that factors transportation alternatives.</p>

<p>what about student projects?</p>	<p>YES! Please use for student projects. Maybe just add a note in the title like "test" or "student study". We definitely need to educate the next generation.</p>
<p>Can you do before and after a project intervention?</p>	<p>You could do an existing conditions analysis using the app. Just try to note "existing condition" in the name and it will get excluded from the total impact stats. I hope to add a separate category for this.</p>
<p>Question: Does the "wetlands" category apply to linear stormwater elements, like bioswales, or just larger detention/retention areas?</p>	<p>It is currently a sequestration rate for constructed wetlands. Will add it to the list of suggested additions.</p>
<p>And: If you are working in a constrained site where it is not feasible to add significant planting, is there a way the calculator can take into account area of land required to offset project?</p>	<p>Not yet, but there are other online calculators that can help you purchase offsets for forests, wetlands etc.</p>
<p>Does the tool account for loss of sequestration from demo/removal/disturbance of existing vegetation and soil associated with project implementation?</p>	<p>Demo is not currently a detailed calculation, just added into the contingency.</p>
<p>Is there a way to credit for reuse of materials on site?</p>	<p>Not yet, could be added.</p>
<p>That's really great! Thank you!!!</p>	<p>Thank you for joining!</p>
<p>Do the materials include all of the subbase materials, and what is the assumption of wood type on decking?</p>	<p>You should add in all the sub-base materials separately - for example, for a concrete section - add the concrete, then also add the quantity/thickness of your aggregate base.</p>

<p>What is the source of the carbon impact data?</p>	<p>It comes from the Athena Impact Estimator - a free, open source industry standard in the US.</p>
<p>If it is confidential, how does the industry have confidence in its accuracy? Has there been scientific peer review?</p>	<p>I think I misunderstood the verbal question during the webinar - the data entered/collected is kept confidential. The data source information is documented in the report that you can download on the website: https://climatepositivedesign.com/resources/data-report/ It is also noted on the bottom of the app input pages.</p> <p>I brought on the environmental consultant Atelier Ten to verify all the metrics and align the data with industry standards.</p>
<p>How is transport distance calculated on the generic materials? If specific materials are entered and their manufacturing location, the carbon could be determined for each element, so if the transportation carbon impact per mile was an option, that would be helpful.</p>	<p>Transport is factored by average distances per Athena and the additional contingency. Yes, the materials and source locations could be broken out separately in the future.</p>
<p>How to get civil engineers and architects on board?</p>	<p>Start talking to them! Show them the potential. The information generated in the scorecard can be directly added into a LCA (life cycle assessment). We can help an overall project carbon impact - we've just been a missing piece of the puzzle until now.</p>
<p>Is there any attempt to align/connect with Sustainable Sites? Are there similar calculators for architectural projects - opportunity to work with architects and for them to see the value of landscapes to improve the performance of buildings?</p>	<p>Yes and LEED. Yes, Tally is a similar calculator for embodied carbon in buildings.</p>
<p>what about entering items such as custom gabion walls or concrete block walls?</p>	<p>You can add them as a "custom element" in the materials tab. Or we could expand the items to include more.</p>

What does the terrace item in site elements refer to	a stepped element
Once we reach positive carbon how do we estimate positive carbon offset over time in calculator?	The "score" is telling you how many years it takes you to offset your carbon footprint. After that, you are only sequestering. Does that make sense? Take a look at the graph in the lower left hand corner of the scorecard.
have you developed a spec for biochar at CMG?	We're currently working on it.
50 years is a long life for many parks. Are you considering adding a re-use/recyclable type category for materials? Crushed rock vs. concrete?	Agreed. It is aligning with other industry standards (Living Building Challenge). Reused/recycled materials can and should be added.
Is an API on the roadmap so we could automate sending data straight from our SIM/BIM systems?	Not yet.
talk about how to input existing conditions data to show future plan reduction	You could do an existing conditions analysis using the app. Just try to note "existing condition" in the name and it will get excluded from the total impact stats. I hope to add a separate category for this.
Can we see other projects that are inputted?	Not yet, but would that be useful? It could perhaps be a user option.
what techniques do you recommend for limiting carbon impacts of large single-family developments?	Check out the toolkit on the resources page for ideas.
how you rate different types pf meadows, trees, etc. in the CO2 capture?	A good way to understand that would be to set a defined project area - then add how many of a certain type of wetlands or trees you could include within and compare the numbers.

<p>how/where is the platform stored? how is it possible to offer so many users a login? does that require a certain type of license?</p>	<p>The Pathfinder is a web-based app and data is stored online. No, the data storage is manageable at this point in time so it doesn't require a license. Good question about the # of users - I am not sure of the max capacity, but should find out! These are the things apparently you learn in creating a beta app.</p>
<p>what if I just want to create a hypothetical project to test out different solutions?</p>	<p>You definitely can! It's helpful if you label it "Test" or put test in the title</p>
<p>are all projects entered into "path finder" able to be viewed publicly?</p>	<p>No. Would it be useful for them to be? Maybe that could be an option the user selects.</p>
<p>Do evergreen plants sequester more carbon than deciduous plants?</p>	<p>Deciduous have slightly higher sequestration rates. Check out the online Toolkit for more information: https://climatepositivedesign.com/resources/design-toolkit/</p>
<p>If so by what percentage?</p>	<p>Not much.</p>
<p>For trees (either in soft or hard surface) what are assumptions about planting design and lifespan? Does the reference speak to that?</p>	<p>Yes, the report discusses that. The Pathfinder assumes total decomposition, and only factors the carbon that is stored permanently in the soil (about 20% of the total carbon sequestered).</p>
<p>Do you have data specific data as to lawn sequestration potential - this product seems to be excluded.</p>	<p>There is a drop down category for different lawns in the "planting" tab. It could definitely be expanded.</p>

<p>The Canadian Nursery Landscape Association is currently doing a lit review on turf LCCAs - trying to quantify its contribution - it is generally categorized as requiring high maintenance inputs which results in it being a carbon cost due to emissions - have you seen data that quantifies its carbon sequestration?</p>	<p>Yes. The high maintenance lawn in the Pathfinder is actually a net carbon emitter. You can also check out the references listed in the report for more information.</p>
<p>Are EPD's an internationally available document, or are these something only North American manufacturers are volunteering to provide?</p>	<p>It is an international system. Check it out: https://www.environdec.com/What-is-an-EPD/</p>
<p>Are there any ambitions to link this data directly to a USGBC LEED project profile in support of Sustainable Sites credits?</p>	<p>Yes. Hoping to get in some credits in 2020!</p>
<p>Do you consider size of nursery stock? Bigger plants require more resource input over time in the nursery.</p>	<p>Not currently, but good suggestions to add!</p>
<p>Do you consider water use? Water is pumped, using electric power.</p>	<p>Not currently, but good suggestions to add!</p>
<p>Do you consider source of electric power used for project maintenance? Coal? Solar?</p>	<p>Yes, electric vs. gasoline is included within the "maintenance" tab. This one could definitely be expanded.</p>
<p>Is demolition included?</p>	<p>Not in detail. Just covered by a contingency.</p>
<p>Are you that assuming plants are climate adapted, or that they will need irrigation through their life?</p>	<p>It is at a high level of detail at this point, based on sequestration rates available which do not factor in those aspects at this point in time.</p>

1) Is material sourcing taken into account in the calculations?	Yes, it is based on average US industry standards from the Athena Impact Estimator.
2) How can we use this app to increase students awareness in Landscape Architecture teaching?	Feel free to use on your projects. Just note "Test" or "Education" in the title.
How did you get the data of unit value of carbon emitted for plants or materials that don't submit a EPD?	Will probably need to work with nurseries on that.
Is transportation of materials embodied in the toolkit for calculations of CO2 emissions?	Yes.
Do the carbon values for materials include values for both manufacture and aging in place?	Yes, manufacturing. Not replacement/aging in place.
Do the carbon values also include end-of-service recycling/disposal/etc.?	Not materials. Only tree decomposition.
In terms of materials, are different carbon statistics used for different wood species?	Unknown.
Do the calculations take into account construction materials for each element? (Ex. base material under a walkway or concrete pad)	Add the base materials separately.
where did you get or how do you calculate the Co2 equivalent of soft scapes?	Sequestration data comes from the US Forest Service.

<p>has there been any success writing the reduction of LCF into performance specifications for GC/trades on site installation of projects? and or in between the phase of project implementation and maintenance tracking?</p>	<p>This is the beginning of the conversation for sites - we have a ways to go with getting this info integrated into specs and operations and maintenance manuals.</p>
<p>Please add prairie/savanna. I would find your calculator very valuable for the type of landscape "rehab" and "retrofits" to go from conventional to sustainable. To do this, I incorporate native plant community-based designed landscapes to replace an existing conventional landscape. Good example would be an industrial/office park situation or other campus.</p>	<p>That's a great idea. Do you have sequestration rates for those typologies? Yes, you can do multiple scenarios for different types of designs - just note them with the same project name and maybe indicate your "final" selected design.</p>
<p>BTW maintenance becomes "stewardship" in this scenario, with a bit of gardening at the "front doors" of the buildings. The vocabulary also translates to the stormwater management features.</p>	
<p>So it would be great to have some "stewardship" carbon metrics in your calculator. I would also separate "burned" from non-burned for stewardship.</p>	<p>Noted, thank you.</p>