

# SITES PILOT CREDIT 3:

## ASSESS AND IMPROVE SITE CARBON PERFORMANCE

2 - 6 points

### Intent:

To understand and improve a site's carbon performance by assessing and increasing carbon sequestration capacity and reducing embodied and operational carbon.

### Requirements

Assess and/or reduce embodied and operational carbon emissions and/or increase on-site sequestered carbon through one of the following options.

Note, for the purposes of this pilot credit, the baseline case is defined by the project team, which can be the existing conditions of the project site (pre-design) or the initial proposed site design for the project. Measure CO<sub>2</sub> in lbs. or kg in a 50-year lifespan. See Resources for recommended methods for calculations.

### Option 1: On-site Sequestered Carbon (2-3 points)

- Path 1: Assess the amount of CO<sub>2</sub> sequestered by all trees and plants on the site. Calculate for the baseline site and the proposed site. (2 points)  
OR
- Path 2: Complete Path 1 and demonstrate a minimum 10% increase in carbon sequestered by all trees and plants added to the proposed site from baseline site conditions. (3 points)

### Option 2: On-site Carbon Emissions (2-3 points)

- Path 1: Assess the amount of embodied and operational CO<sub>2</sub> emissions for the site. Calculate for the baseline site and the proposed site. (2 points)  
OR
- Path 2: Complete Path 1 and demonstrate a minimum 10% reduction in combined embodied and operational carbon on the proposed site from baseline site conditions. (3 points)

### Option 3: Total Site Carbon Performance (4-6 points)

- Complete Path 1 from Option 1 and 2 to assess both on-site sequestered carbon and reductions in carbon emissions. (4 points)  
OR
- Complete Path 1 from Option 1 and 2 to assess both on-site sequestered carbon and reductions in carbon emissions.
- Demonstrate a 20% improvement in total site carbon performance on the proposed site from baseline site conditions from a combination of increased sequestration and emissions reductions. (6 points)

## Submittal Documentation

### Option 1: On-site Sequestered Carbon

For Paths 1 and 2:

- Description of scope and analysis process in defining the baseline site and proposed site.
- Calculations showing the amount of CO<sub>2</sub> sequestered (in lbs. or kg) by all trees and plants on the baseline site and proposed site.

For Path 2: Documentation demonstrating at minimum a 10% increase in the amount of CO<sub>2</sub> sequestered (in lbs. or kg) by all trees and plants on the proposed site from baseline site conditions.

### Option 2: On-site Carbon Emissions

For Paths 1 and 2:

- Description of scope and analysis process in defining the baseline site and proposed site.
- Calculations showing the amount of embodied and operational CO<sub>2</sub> emitted (in lbs. or kg) on the baseline site and proposed site.

For Path 2: Documentation demonstrating at minimum a 10% decrease on the amount of embodied and operational CO<sub>2</sub> emitted (in lbs. or kg) on the proposed site from baseline site conditions.

### Option 3: Total Site Carbon Performance

- Description of scope and analysis process in defining the baseline site and proposed site.
- Calculations showing the amount of CO<sub>2</sub> sequestered from trees and plants and embodied and operational CO<sub>2</sub> emitted (in lbs. or kg) for the baseline site and proposed site.
- Documentation demonstrating a 20% improvement of total carbon performance on the proposed site from the baseline site conditions. (Submit also if pursuing 6 points.)

## Definitions

- Baseline Case: For the purposes of this pilot credit, baseline case is defined as one of the following:
  - Existing site conditions – the existing material and vegetation coverage of a site before design and construction occurs. Refer to the site assessment (Prerequisite 2.1). Note, the baseline site for carbon sequestration includes the existing vegetation while the proposed site includes added trees and plants.
  - Initial site design – the design (including vegetation, hardscape and materials) that was initially proposed for the project but is not the final design.
- Carbon emissions:
  - Embodied carbon (emissions): Greenhouse gas emissions (CO<sub>2</sub>-eq) associated with the extraction, manufacturing, transportation, installation, use/maintenance of construction materials. Often this information comes directly from manufacturers in the form of ‘Environmental Product Declarations’ – a standard way of communicating an industrial product’s environmental impacts.
  - Operational carbon (emissions): Greenhouse gases (CO<sub>2</sub>) emitted from either one-time site impacts (such as grading, tree removal etc.), and ongoing emissions from site operations like the use of maintenance equipment or fertilizers over time.
- Sequestered carbon: Plants ‘sequester’ carbon dioxide from the air through the process of photosynthesis, during which CO<sub>2</sub> is converted to cellulose, sugars and other materials in a chemical reaction catalyzed by sunlight. These are then mostly stored as biomass – wood, roots and leaves, while some CO<sub>2</sub> is respired back.

## Resources / Documentation Guidance

- For Option 1: For calculating carbon sequestered by trees and plants,
  - Use the Pathfinder App by Climate Positive Design (a free tool that can be accessed at <https://app.climatepositivedesign.com/>) which includes trees, shrubs, grasses and wetlands, or
  - Use the most current version of the i-Tree Planting Calculator (a free tool that can be accessed at <https://planting.itreetools.org/>) which includes trees and shrubs.
- For Option 2: For calculating the embodied carbon for materials,
  - Use the Pathfinder App by Climate Positive Design (a free tool that can be accessed at <https://app.climatepositivedesign.com/>), which sources ATHENA and includes additional landscape materials sourced from manufacturers' Environmental Product Declarations, or
  - ATHENA® Impact Estimator for Buildings, Athena Sustainable Materials Institute, Ontario, Canada: <http://www.athenasmi.org/what-we-do/lca-data-software/> (Note, this tool is limited in landscape/site materials.)
- For Option 2: For calculating the operational carbon for landscapes/sites,
  - Use the Pathfinder App by Climate Positive Design (a free tool that can be accessed at <https://app.climatepositivedesign.com/>) which includes maintenance equipment, fertilizer, soil disturbance, demolition and waste processing, etc.
- For Option 3: calculating carbon sequestered by trees and plants and embodied and operational carbon,
  - Use the Pathfinder App by Climate Positive Design (a free tool that can be accessed at <https://app.climatepositivedesign.com/>)
- Background for the purpose of documenting site carbon,
  - Carbon dioxide equivalent: The CO<sub>2</sub> equivalent, abbreviated as CO<sub>2</sub>-eq is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential.

## Survey Questions (to complete as part of submission)

1. What were the reasons for attempting this credit?
2. What aspects of the credit were easiest? Most difficult? What revisions would you recommend to address these aspects?
3. If it weren't for this pilot credit, would the project team have evaluated the site's carbon performance independently?
4. Which tool was used for calculations? Did you find it easy or difficult to use?
5. Were all the trees and plants from your project included in the tool you used (please list tool)? If not, approximately what percentage of vegetation was missing? Please list which were missing.
6. Were all site materials from your project included in the tool you used (please list tool)? If not, approximately what percentage of material was missing? Please list which were missing.
7. Did the pilot credit influence the project's decision-making regarding site and landscape design, material selection or use of impervious surfaces?