Program Overview

• C³ is a greenhouse gas offset program funded by the Climate Trust
• The core concept is to reduce the amount of portland cement used in the production of concrete by substituting SCMs, thereby reducing CO₂ emissions and creating offsets
• West Main developed and manages C³ and sells all offsets generated to The Climate Trust
Program Details

- Offsets are generated at the point of mixing the concrete
- One metric ton cement induces 0.81 metric tons of CO$_2$
- Eligible SCMs
  - fly ash
  - slag
  - silica fume
  - rice hull ash
  - cement kiln dust
- Offset payments are $4 per metric ton of avoided CO$_2$ emissions
Offset Quality

- Monitoring and Verification Plan
- Ownership
- Additionality
  - Sliding baseline
  - Conservative emissions calculations dictate cement emissions factor development (0.81)
- Third-party verification
Emissions Calculations

• Calculated on a quarterly basis
• Cement use measured *per cubic yard*, in the form of cement to concrete ratios
• Emissions reductions and offsets generated are directly related to the difference between the baseline cement to concrete ratio and the current cement to concrete ratio
Sample Calculations
Calculating the Baseline

To determine offsets generated, we start by calculating baseline cement to concrete ratios for each calendar quarter, based on the participant’s cement usage and concrete production data for the past three years.

<table>
<thead>
<tr>
<th></th>
<th>Quarter 1, Year 1</th>
<th>Quarter 1, Year 2</th>
<th>Quarter 1, Year 3</th>
<th>Average</th>
<th>Average (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Used (tons)</td>
<td>7,752.5</td>
<td>8,085</td>
<td>7,875</td>
<td>7,904.167</td>
<td>15,808,333</td>
</tr>
<tr>
<td>Concrete Manufactured (cy)</td>
<td>25,812.5</td>
<td>27,387.5</td>
<td>26,950</td>
<td>26,716.667</td>
<td>106,866,667</td>
</tr>
</tbody>
</table>

Cement Used (lbs) = \( \frac{15,808,333}{106,866,667} \) = 0.1479

Concrete Mfd (lbs) 106,866,667
Sample Calculations
Baseline Emissions

Next, we calculate baseline emissions, or the emissions that would have occurred under business-as-usual, for the current calendar quarter. This means that the baseline cement to concrete ratio is used with the current quarter’s yardage, to show the emissions that would have been emitted this quarter if the participant were operating under business-as-usual.

<table>
<thead>
<tr>
<th>Quarter 1, Current Year</th>
<th>Concrete Manufactured (cy)</th>
<th>Concrete Manufactured (lbs)</th>
<th>Baseline Cement to Concrete Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28,131.25</td>
<td>112,525,000</td>
<td>0.1479</td>
</tr>
</tbody>
</table>

Baseline Emissions = 2204.6 metric tons
Sample Calculations

Current Emissions

Next, we calculate current emissions, or the emissions that actually occurred this quarter. This means that the current cement to concrete ratio is used with the current quarter’s yardage, to show the emissions that were actually emitted this quarter, with the participant no longer operating under business-as-usual.

<table>
<thead>
<tr>
<th>Quarter 1, Current Year</th>
<th>Cement Used (tons)</th>
<th>Cement Used (lbs)</th>
<th>Concrete Manufactured (lbs)</th>
<th>Current Cement to Concrete Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6,300</td>
<td>12,600,000</td>
<td>112,525,000</td>
<td>0.1120</td>
</tr>
</tbody>
</table>

\[
\text{Cement Used (lbs) = } \frac{12,600,000}{112,525,000} = 0.1120
\]

\[
\text{Concrete Mfd (lbs) } = 112,525,000
\]

\[
\text{Current Emissions } = 112,525,000 (0.1120 \times 0.81) = 4,630 \text{ metric tons}
\]

\[
\text{2204.6}
\]
Sample Calculations

Emissions Reduction

To determine the number of offsets generated by a participant, Current Emissions are subtracted from Baseline Emissions. Avoided emissions translate into offsets at a one-to-one rate (i.e. one offset is equal to one metric ton of avoided CO$_2$ emissions). These offsets are then purchased from the participant by the Climate Trust at $4.00 per offset.

Emissions Reduction = 6,115 – 4,630 = 1,485 metric tons

Payment = 1,485 * $4.00 = $5,940

Annual Payment = $22,000 (estimate)
Participation

• Enroll by signing Program Participant Contract and Transfer & Disclaimer Form
• Provide historical data to develop baselines
• Provide data to calculate current emissions
• West Main calculates emissions reduction
• Sign Monitoring Form
• Receive offset payment
Why participate?

- Reduce carbon footprint
- Performance tracking
- Supports participation in industry initiatives
- Gain recognition for green practices
- Reduce mix costs
- Earn additional quarterly income
www.coolclimateconcrete.com