

# CLIMATE<sup>+</sup>

Development Program

FRAMEWORK FOR  
CLIMATE POSITIVE  
COMMUNITIES



CLINTON  
**CLIMATE**  
INITIATIVE

**C40**  
**CITIES**  
CLIMATE LEADERSHIP GROUP



## I. BACKGROUND

Cities represent approximately 50% of the world's total population, but they consume 75% of the world's energy resources and generate 75% of all greenhouse gases that result from human activity. In most cities, buildings and the water, waste, lighting, and transportation systems that support them are responsible for the vast majority of these emissions.

## II. CLIMATE POSITIVE DEVELOPMENT

The C40 Climate Positive Development Program was developed by the C40 Cities Climate Leadership Group, in partnership with the Clinton Climate Initiative (CCI), and the U.S. Green Building Council. It aims to create large-scale models for urban development that reduce greenhouse gas emissions below zero in an economically viable manner. Climate Positive Developments will reduce the emissions they create and offset the remainder by removing emissions from their adjacent communities. The creation of the new development will thus reduce overall carbon emissions. We refer to this as a Climate Positive outcome.

Accomplishing this goal will require the cooperation of developers and governments. A development consists not just of buildings, roads and sidewalks. It also consists of systems that produce energy, distribute electricity, heat and cool, process waste, provide water and lighting, and access transportation. Some of these functions are normally carried out by developers and some by governments or public agencies. In a Climate Positive development, these stakeholders will be called Development Partners, because it is in working together they will make their projects Climate Positive and economically successful. The participation of government is especially important as the new development will likely affect the surrounding community in order to become climate positive.

By demonstrating that large scale new urban developments can be created to be climate positive and economically viable at the same time, ideally governments will be compelled to adopt climate positive standards as future requirements for major new developments within their jurisdictions.

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### III. CONCEPT

The Climate Positive Development Program is not rigidly prescriptive as there is no single path for a development to achieve a Climate Positive outcome. Developments in any market in the world can reach this target. Different climates, fuel supplies, and political landscapes are not impediments; they simply require different solutions. By thoroughly understanding these obstacles and harnessing unique local advantages, Development Partners can build developments that operate with net-negative emissions when completed.

### IV. OBJECTIVES

This document outlines a framework that will ensure Development Partners integrate the Climate Positive goal into their development plans. The framework will also ensure that the models followed by Development Partners are documented and replicable. To accelerate replication and market change, the framework establishes a recognition platform that rewards leadership and innovation in pursuit of Climate Positive outcomes.

The Program will assist Development Partners to achieve the core goal of net-negative emissions; it will facilitate collaboration between private and public-sector participants; and it will serve as an information conduit, share best practices, and build a library of decision-making tools and measurement methodologies.

### V. WHY A FRAMEWORK?

New developments of this size can take decades to complete. A framework encourages Development Partners to (a) set realistic plans for achieving the emissions target by project completion (b) demonstrate that their implementation conforms with those plans at important milestones, and (c) adjust implementation as circumstances and technologies change over the course of development.

Although co-determined milestones will serve as important check-points, Development Partners will likely face unanticipated challenges. The concept of continuous improvement is essential for overcoming these challenges and the use of a framework provides the latitude to do so. If one strategy proves insufficient or based on faulty assumptions, Development Partners must be willing to find replacement solutions. Documenting this process will contribute to an evolving body of knowledge and help other developers navigate similar challenges.

The Program's framework is intended to be both simple and flexible. It provides a performance-based goal and aims to generate a range of solutions that can be adopted by Development Partners around the world working toward that goal.

## VI. EMISSIONS DEFINITIONS FOR THE CLIMATE POSITIVE PROGRAM

In order to avoid undue complexity, the Climate Positive Program primarily focuses on operational emissions. For the purposes of this program, emissions associated with site preparation and construction phases will be tracked but will not count as operational emissions. The program defines Climate Positive as emissions from yearly operations after the community is complete—a point in time co-determined by the Development Partners and the Program.

The total emissions that enter the atmosphere as a result of these three activities will be considered the “emission impacts” of the development. For the remainder of this document, the terms “emissions” and “emission impacts” refer only to operational emissions unless otherwise noted. For purposes of standardization, a development’s emission impacts shall be measured in metric tons of CO<sub>2</sub>e.

### There are three sources of operational emissions:

- + Thermal and electrical energy use
- + Waste
- + Transportation

Development Partners that successfully join the Program must project and track emissions from these three sources to determine their emission impacts. Furthermore, they will be expected to defend decisions to include or exclude specific emissions. To this end, the Program suggests that Development Partners include emissions associated with:

1. on-site thermal energy and electrical use, including emissions from energy consumed in buildings, project infrastructure, and water usage
2. solid waste and wastewater, including liquid and solid waste produced on-site, regardless of whether they are treated on-site or off-site
3. transportation, including a percentage of the total emissions associated with vehicular trips that start or end within the community.

These parameters are not meant to be prescriptive; they are too broad to serve such a purpose. Instead, they are intended to guide Development Partners to understand the emission impacts their development will have and to ensure that solutions are identified and implemented in order to reduce emissions.

It is difficult to define emissions associated with transportation since much of it occurs off-site, beyond the purview of developers. Consequently, Development Partners will not be expected to include 100% of emissions associated with transportation, but they must be prepared to defend their treatment of associated emissions. Based on the advice of transportation experts, it is suggested that Development Partners include 40% of transportation emissions from trips that start or end on-site. 40% was selected as a proxy for the percentage of emissions associated with the development; Development Partners may submit another figure for consideration, so long as such a figure is substantiated by local circumstances.

## CONSTRUCTION EMISSIONS

The Program recognizes that the three operational emission categories do not represent the totality of emissions generated throughout the life of a development. For the pilot phase of the Climate Positive Development Program, emissions from construction will not be included as part of the emission impacts of a development; however, the Program requires Development Partners to identify strategies to reduce emissions associated with their largest construction phase emissions sources, and to monitor and track construction phase emissions from these sources.

Since the sources of construction-related emissions are expected to vary from site to site, Development Partners will need to defend decisions to include or exclude specific emission sources in their

plans and projections. The Program suggests that Development Partners consider emissions sources associated with the following categories of construction-related emissions: energy, waste, transportation, embodied carbon in materials, and land use change. Development Partners should determine where the majority of their emissions are coming from and develop strategies that significantly reduce associated emissions.

By identifying the largest, site-specific construction emissions, Development Partners will be in a better position to plan mitigation strategies. Given the scale of Climate Positive Development sites, addressing construction emissions represents a meaningful opportunity for Development Partners to demonstrate early leadership in green design and construction.

***“...emissions from construction will not be included as part of the emission impacts.”***

## VII. ACHIEVING A CLIMATE POSITIVE OUTCOME MEANS REDUCING EMISSION IMPACTS AND CREATING CREDITS

Development Partners must identify and implement solutions that reduce their operational emission impacts whenever practical and create emission “credits”<sup>1</sup> to offset the remainder, most commonly through the export of clean energy, including power generated by solar, wind, wave, tidal, geothermal, and biomass in the form of plant matter. Exporting clean energy in this manner is the primary way Development Partners can earn credits, which reduce the net emission impacts of developments.

Development Partners will get the most out of their clean or low carbon energy strategies if they first reduce the amount of energy the development consumes through efficiency and conservation measures.

<sup>1</sup>For the purposes of the Climate Positive Program, the term “credit” is employed as a carbon accounting term, whereby abated emissions in the broader community serve to cancel out emissions generated within the development itself. Climate Positive Credits do not refer to credits earned within LEED and other green rating systems.

## LOWERING IMPACTS: REDUCING CO<sub>2</sub>e ON-SITE

In general, Development Partners should strive to maximize efficiency and minimize demand. Example strategies are listed below. Though such examples are not exhaustive, they are identified in order to highlight the types of initiatives that can be pursued throughout buildings, water, waste, and transportation. They are also listed here to facilitate common understanding and to make these categories useful terminologies for future communication:

### + Buildings

Integrative designs that take advantage of passive heating and cooling; regionally appropriate insulation and materials; high-performance mechanical systems and appliances coupled with regular commissioning; smart metering systems that allow users to track and modify their behavior; district heating and cooling solutions.

### + Water

Rainwater recapture for non-potable uses; efficient plumbing and irrigation; low-flow fixtures and appliances; wastewater treatment solutions that integrate with biomass systems; smart metering solutions that allow users to track and modify their behavior.

### + Waste (solid waste and wastewater)

Minimizing solid and industrial waste and diverting remaining waste from landfills; recycling; composting; methane recapture; waste-to-energy.

### + Transportation

Understand three interconnected levers that create vehicle emissions: fuel-type, fuel-efficiency, and distance traveled. Development Partners can address fuel-type and efficiency by minimizing demand for carbon-intensive forms of transportation and meeting transportation needs with zero or low-emission alternatives. Site selection and design can reduce distances traveled, especially by connecting to existing cities and allowing residents to live, work, and shop on-site at mixed-use facilities.

Although buildings, water, waste, and transportation are each described independently, successful plans will consider them as interrelated components. For example, holistic strategies will recognize the impact of site selection on transportation and building design.

Strategies that reduce power, heat, and fuel demand, such as those listed above, can substantially diminish the development's emission impacts, especially in a high carbon energy context. Development Partners will also need to maximize the amount of clean and low carbon energy that is technically and economically feasible in order to minimize the carbon content of the development's remaining energy consumption. Doing so will further reduce the development's emission impacts.

## CREATING CREDITS: ABATING CO<sub>2</sub>e OFFSITE

Although Development Partners should strive to reduce their on-site emission impacts, they will also have to earn credits in order to achieve Climate Positive outcomes. Just as emission impacts are measured in metric tons CO<sub>2</sub>e, so too are credits. In order to achieve a Climate Positive outcome, a development's credits (tons CO<sub>2</sub>e) must exceed its emission impacts (tons CO<sub>2</sub>e) annually. As Development Partners (a) reduce or abate emissions in the local community or (b) capture carbon on-site, their credits increase.

One way to earn credits is to create or preserve on-site parks and green spaces as carbon sinks. Most credits, however, will be earned when the actions of a Development Partner lead to avoided or abated emissions in the surrounding community.

Not all possible projects that reduce local emissions will result in credits. In order to earn credits, projects must be physically connected to the development through energy, waste, water, or transportation infrastructure or through other relevant systems. Furthermore, avoided emissions must be quantifiable. Consider the following examples:

### Simple Examples:

- + A Development Partner installs rooftop solar PV panels on all buildings in their site. The power produced by the panels is not consumed by the buildings themselves, but is instead sold back to the grid, which otherwise relies on fossil fuels. Credits are earned because the solar PV panels add carbon-neutral energy to a carbon-intensive grid.
- + A Development Partner installs rooftop solar PV panels on all buildings in their site, and the solar power is consumed directly by those buildings. This lowers the amount of emissions created on-site, thereby reducing the development's emission impacts. However, no excess solar power is sold back to the grid, so no credits are earned.

### Catalyzation Examples:

- + A Development Partner uses LED streetlights in their site. This reduces the emission impacts because LED streetlights are significantly more energy efficient than standard streetlight technologies. But the project does not earn any credits.
- + Subsequently, the same Development Partner meaningfully catalyzes the adoption of the same technology in neighboring communities for both retrofit and new construction projects. If the Development Partner can document their involvement, they can claim credit for all or a portion of the annual energy savings in those communities.

### Location versus Consumption Examples:

- + A Development Partner wants to construct a district heating system powered by either natural gas or renewable energy to service the entire heating demand of the site. This will reduce the emission impacts of the site. Analysis, however, shows that the power plant would maximize economic benefits if it were built to greater scale beyond the confines of the site. The plant is built and provides heat to both the Climate Positive site and neighboring communities, replacing boilers fired with carbon-intensive fossil fuels. As such, the Development Partner both reduces the site's emissions (i.e., impact) and earns credits from the exported heat equivalent to the reduced emissions from nearby sites.
- + If the Development Partner had built a smaller heating plant that only serviced the development itself, no credits would have been earned—regardless of where the plant was located. Credits can only be earned by expanding or exporting cleaner alternatives that reduce local emissions beyond the site boundaries. To reiterate: the physical location of the district heating plant is immaterial; what matters is consumption. If the heat is consumed on-site, it lowers on-site impact. If it is consumed by nearby communities, it creates credits, so long as there is a physical or system connection to the development (here, proven by the fact that the plant supplies heat to the development).

The opportunity for earning credits is not an invitation for developers to finance their own emissions by purchasing unassociated off-site carbon credits. Development Partners will not be able to earn Climate Positive credits through the purchase of external carbon offsets. Instead, credits represent an opportunity for Development Partners to make measurable improvements to their greater municipal landscapes and/or regions.

This approach to credits is designed to reward those Development Partners that act as first-movers to advance energy efficient technologies, generate more responsible use of resources, and influence others to create clean or low carbon sources of energy.

***“Development Partners will not be able to earn Climate Positive credits through the purchase of external carbon offsets.”***

To earn credit, the burden of proof will fall on Development Partners to demonstrate that the emission reduction project is connected to their new development in a meaningful way and that the activity associated with the project would not have occurred without their participation. They will also be expected to quantify the overall impact of the project proportionate to their contribution.

Although there is a certain amount of subjectivity in this process, the Program will convene experts to review plans, vet projects, and ensure that developers are acting in good faith. Known as the Climate Positive Vetting Committee, this group will, among other roles, be responsible for ensuring that developers do not use this convention disingenuously on a case-by-case basis.

## VIII. APPLICATION PROCESS, PROGRAM REQUIREMENTS AND RECOGNITION OPPORTUNITIES

The Program seeks to reward Development Partners that demonstrate leadership in green design and that advance sustainable patterns of urban development towards Climate Positive outcomes. Therefore, it has devised a program requirement's platform to serve two needs:

1. Provide incremental verification that Development Partners are on-track with their emissions roadmap, executing their emission reduction plan en route to a viable Climate Positive outcome, and
2. Incentivize involvement by recognizing and rewarding success

In addition, the recognition platform will help clarify the relationship between Development Partners and the Program by setting concrete goals for the developer to reach at co-determined stages. This will enable the Program to deliver targeted support to ensure that Development Partners attain their own paced milestones. While the organization of the recognition system is described below, details of its implementation and approved usage of Program marks (images) are addressed in the updated Climate Positive Communications Guidelines.

The designations and corresponding Program marks described below are earned by the Development Partners themselves. With approval from the Program, Development Partners may refer to their association with Climate Positive in publicity materials, in alignment with the Climate Positive Communication Guidelines.

All decisions to approve or deny a development admission or any stage of recognition will be made exclusively by the Climate Positive Vetting Committee.

### Development Journey

While each site will have its own unique journey to achieving a Climate Positive outcome, the Climate Positive planning and recognition stages must be completed in a linear, chronological fashion. For example, if a Development Partner has been accepted into the program when it is in construction, it will still be required to complete its Climate Positive planning—moving through Stage 1 then 2 and so on (pp 10-12). This ensures that all Development Partners create a Climate Positive Roadmap, have appropriate governmental support and establish a Measurement and Verification Plan at the start of their Climate Positive journey.

The four key recognition stages associated with a Development Partners' Climate Positive journey are outlined below. Once a Development Partner completes each stage, it will receive the relevant Climate Positive mark.

- + **Application:** No Mark
- + **Stage 1.** "Climate Positive Candidate"  
(accepted into program)
- + **Stage 2.** "Climate Positive Participant"  
(detailed plans approved)
- + **Stage 3.** "Climate Positive Progress Site"
- + **Stage 4.** "Climate Positive"

## IX. CLIMATE POSITIVE STAGES

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### STAGE 1: CLIMATE POSITIVE CANDIDATE

Development Partners can apply to join the Climate Positive Development Program by submitting a concise Letter of Intent explaining the development, its committed stakeholders, and its reason for applying. The letter should briefly outline plans for achieving a Climate Positive outcome and how the Development Partners expect to overcome any knowledge gaps. Upon successful review of this letter and a due diligence process, which may include follow-up from the Vetting Committee, a development will be invited to join the program and the Development Partner will be admitted as a “Climate Positive Candidate.”

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Candidate

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### STAGE 2: CLIMATE POSITIVE PARTICIPANT

After a Development Partner becomes a Climate Positive Candidate, it should prepare a detailed document outlining the strategies and tactics that will result in a Climate Positive outcome. This submission must include the following four critical components:

#### A) Climate Positive Roadmap

This section should clearly identify the infrastructure strategies and policy initiatives the Development Partners plan to pursue to achieve a net-negative emissions outcome. Development Partners will also provide their top construction-related emissions for each phase of the development, which should include both the projected carbon emissions and the strategies employed to mitigate them. Development Partners shall also provide detailed carbon emissions profiles, which forecast the development’s net emissions corresponding to their milestones (Stage 2, component D, page 11) and project completion, by which point the development must be operationally carbon-negative.

Collectively, these strategies and profiles constitute the roadmap. The roadmap should explicitly demonstrate relevant governmental engagement whenever plans require governmental participation beyond general partnership and support. Design plans should also be included if available. Development Partners must provide evidence that such plans are integrated into other planning and design documents for the development.

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Participant

## **B) Measurement and Verification Plan**

This section should clearly identify which measurement protocol or calculation methodology Development Partners plan to employ in order to calculate and verify actual emissions as the development enters operational phases. The measurement plan must include the three sources of operational emissions described above: thermal and electrical energy use, waste, and transportation. It must also include measurement and verification plans for construction emissions sources. Internationally accepted protocols may be combined in order to measure these facets of the development. Any proprietary tools should also be explained to the fullest extent possible and included as an appendix. Documentation must be thorough to enable the Program's review of measurement methodologies employed by pilot-phase communities in order to build a toolkit of methodologies for future phase projects.

## **C) Evidence of Commitment and Partnership**

Whenever it would strengthen the application, Development Partners should provide evidence of commitment and partnership from pertinent financial institutions, technology providers, consultants, municipal departments, and other levels of government. Evidence should demonstrate that such partners have an understanding of specific development and community-wide goals.

## **D) Timeline of Milestones**

Progress of the development in the Program will be formally assessed at three intermediate milestones in the development cycle prior to completion: 25%, 50%, and 75% of construction, however, the suggested quartiles can be applied in terms of capital spent, area of land developed or square foot/square meter of built-out floor space. The development may propose alternative milestones that align more closely with the development's actual construction phases. For each milestone, Development Partners must indicate (1) which infrastructure strategies outlined in the Climate Positive Roadmap will be operational, (2) the projected carbon profile at that point in time, and (3) projected construction phase emissions. In conjunction with the measurement plan, these milestones will serve the dual purpose of ensuring that the development is on track to execute its emission reduction plan and publicly recognizing that the plan is delivering its expected results. Milestones also afford an opportunity to reassess strategies and make adjustments; any such changes must be documented and incorporated into roadmap revisions and corresponding milestones.

Although the timeframe for delivering this detailed, four-part document will vary widely, the Program expects Development Partners to begin preparing all its elements immediately upon admission into the Program.

Throughout the planning process, the Development Partner will be able to use the "Climate Positive Development Candidate" mark, in accordance with the Climate Positive Communications Guidelines. Once a Development Partner's detailed plans have been submitted and approved, it will be able to use the "Climate Positive Development Participant" mark.

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### STAGE 3: CLIMATE POSITIVE PROGRESS SITE

After the Development Partner's plan has been approved and it moves from the planning stages described above into various phases of construction, it will be expected to meet the execution and performance milestones set during Stage 2. As a development reaches those milestones, the Development Partner must submit (1) evidence that infrastructure strategies are commissioned and operational, (2) measurements of actual operational emissions, and (3) measurements of construction phase emissions and evidence that the construction phase strategies described in the work plan are being implemented. If these submissions are consistent with the original projections in the Climate Positive Roadmap, then the development is considered on track. It will be designated a Climate Positive Progress Site and the Development Partner will be able to use the "Progress Site" mark. This designation will be reassessed at each of the co-determined milestones.

If there is significant discrepancy between actual infrastructure execution or emissions performance compared to the original projections in the Roadmap, the "Progress Site" designation may be withheld until the development updates its Roadmap (both strategies and emissions profiles) in a manner that demonstrates the development will once again be on track to achieve a Climate Positive outcome.

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Progress Site

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### STAGE 4: CLIMATE POSITIVE

When a development reaches the 100% completion mark or at the point when there will be no further material changes to the development, Development Partners can submit an emissions profile consistent with protocols outlined in their measurement and verification plans to prove that the development has successfully achieved net-negative emissions. After successful review, the community will be given the Program's highest designation: "Climate Positive" development.

From this point forward, Development Partners need only submit data annually to retain the site's designation. Development Partners may also be invited to play a more vocal and visible role in the Climate Positive Program, especially in advising Climate Positive Candidates and Participants.

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## X. ROLE OF THE CLIMATE POSITIVE DEVELOPMENT PROGRAM DURING THE APPLICATION AND RECOGNITION PROCESS

Climate Positive staff will be available to assist in the preparation of all materials required above and will facilitate access to relevant third parties, including partner organizations, volunteer members of a Technical Resource Panel of Experts, the Advisory Council, and governmental entities. The Program's level of support will vary from development to development as needed. In addition, a dedicated staff member will support and facilitate communication between Development Partners and the Climate Positive Vetting Committee; this Program staff member will serve as the development's advocate and will not have a deciding role during the review process.

## XI. NOTES

The Program acknowledges that there is a degree of subjectivity inherent to its admission criteria and recognition designations. This flexibility is essential to achieve Climate Positive outcomes since it affords Development Partners the opportunity to refine their strategies and seek continuous improvement. Given the embryonic state of large-scale real estate developments pursuing net-negative emissions, there is a lot to learn from experimentation and little to be gained from rigidity. The format of this program is intentionally designed to give participants and decision makers alike the freedom to take chances, test technologies, and put plans through numerous iterations.

This subjectivity is also a byproduct of ongoing debates among industry experts. Since there is not yet consensus on the best design methodologies, integrated strategies, and energy solutions, it is premature to codify best practices or emission protocols into concrete evaluation criteria. Instead, the Program relies, in part, on the market to identify and deliver these solutions and protocols. To protect the integrity of its goals and objectives, the Program will convene impartial experts to review plans, vet projects, and ensure that developers are acting in good faith.

Just as the admission and recognition process relies on some level of subjectivity, so too must decisions to remove developments from the Program. Developments will be removed if it becomes clear that stakeholders are no longer willing to work toward Climate Positive outcomes or if circumstances prevent Development Partners from achieving their stated goals and milestones. When developments are removed from the Program, Development Partners will lose access to Program tools and partnerships and their right to use Climate Positive designations or marks will cease.

Inquiries about the Climate Positive Development Program can be sent to [ClimatePositive@C40.org](mailto:ClimatePositive@C40.org)