Methodology for establishing (Non-Residential & Residential) building proxies

ABSTRACT: The two methodologies for establishing proxies explained through examples

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1. Introduction

There are two methods available to establish proxies for Non-Residential and Residential Buildings for the purposes of Climate Bonds Certification.

The two methods are:
1. Benchmarking against local market emissions performance
2. Proportion of total ratings/labels awarded

This document explains the two methodologies through the use of examples.

2.1. Benchmarking against local market emissions performance

The first step is to use available data to determine the emissions performance of the top 15% most energy efficient buildings (of a particular type e.g. offices) in a local market. The emissions performance of the top 15% forms the start of an "emissions performance trajectory" that declines to zero carbon emissions in 2050.

Data used to establish the emissions performance of the top 15% most energy-efficient buildings must satisfy the following requirements:
- It originates from a reliable source.
- There must be a sufficient sample of buildings that is representative of the market.
- Building emissions performance must reflect emissions for the full fuel cycle (scope 1, 2, and 3).
- Building emissions performance must relate to operational performance not modeled performance.
- Building emissions performance is expressed on an annual basis in $kgCO_2$ terms.

Data could relate to statistical results from a local market survey (where the top 15% has been determined) or a raw data set of individual building emissions performance. The document "Methodology for establishing emissions performance trajectories" provides further details on calculating the emissions performance of the top 15% using raw data.

For a proposed proxy (i.e. building standard, code or rating) to be approved by CBI, there must be evidence to demonstrate that it delivers building emissions performance in line with the emissions performance trajectory.

Sunset dates are set for proxies when they are approved to specify when they will no longer have effect. This is due to the application of an emissions performance trajectory that declines to zero carbon emissions in 2050, creating more stringent emissions thresholds that proxies have to satisfy to remain valid.

This method for establishing the validity of a proxy is more relevant for Residential Buildings than for Non-Residential Buildings.
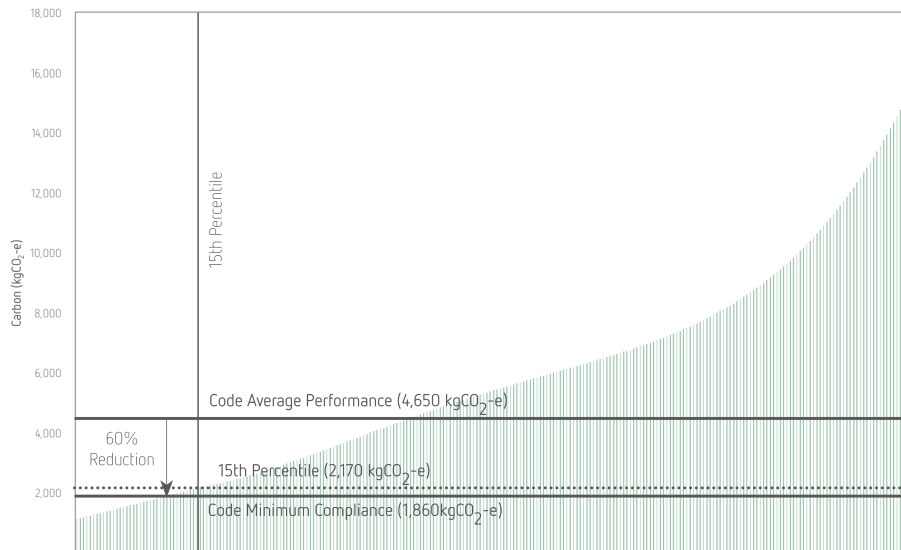
If a reliable emissions performance trajectory can be created for a non-residential building type in a city, there really is no need for a proxy because CBI favours the emissions target method to the proxy method for certifying Non-Residential Buildings. The documents "Non-Residential Buildings Criteria" and "Non-Residential Buildings – Discussion Notes" provide further information on the two certification methods and explains the rationale behind them.

2.1.1. Example – Local building code and 3-bedroom dwellings

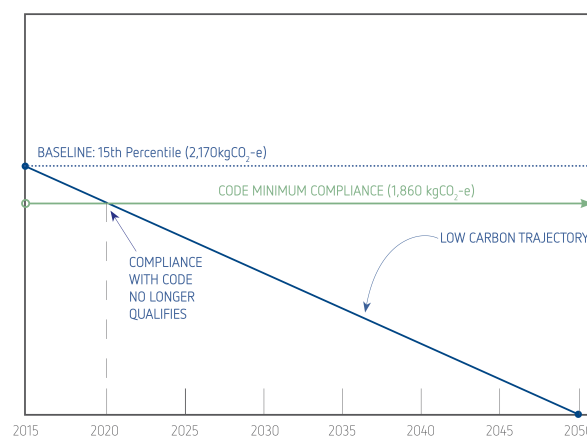In a local market, the emissions performance of the top 15% most energy-efficient 3-bedroom dwellings is 2,170 kgCO$_2$.

In 2015, a local building code requires a minimum 60% reduction against the average emissions performance of three-bedroom dwellings (4,650 kgCO$_2$).

As the local building code requires an emissions performance below 1,860 kgCO$_2$ (4,650*[1-60%]), which falls under the emissions performance of the top 15% (2,170kgCO$_2$), it aligns with the emissions performance trajectory (see diagram below).

As the emissions performance trajectory declines to zero carbon emissions by 2050, it means that the emissions threshold determining the validity of a proxy declines over time such that proxies are only valid for a certain time period. For that reason, sunset dates are set for proxies when they are approved, which specify when they will no longer have effect.

Carrying on with the same example, the emissions performance trajectory (see diagram below) indicates that the emissions threshold (i.e. performance of the top 15%) declines to 1,860 kgCO$_2$ by 2020 (i.e. the performance required by the local building code). From 2020 onwards, the local building code will therefore no longer be sufficient to deliver emissions performance in line with the emissions performance trajectory (as the emissions threshold declines below 1,860 kgCO$_2$).

For this example, the sunset date for the local building code is the year 2020.

2.2. Option B: Proportion of total ratings/labels awarded

This option offers a solution when data and statistics on the emissions performance of buildings in a local market are lacking.

For a proposed proxy (i.e. building rating or label) to be approved by CBI, there must be evidence to demonstrate that the rating or label is in the top 15% of all ratings or labels awarded under the scheme (that predominantly rates buildings on energy efficiency/emissions).

At a minimum, CBI expects the rating or labelling scheme:
- To have an underlying register or database of verified energy/emissions performance data that enables analysis
- To have an underlying register or database of a sufficient size that supports statistically significant conclusions
- To have good market coverage and therefore, is representative and has an adequate spread of performance levels

Proxies established using this option are reviewed every 2 years to ensure that they are still valid.

2.2.1. Example – Labelling scheme and residential buildings

In a local market, a labelling scheme assesses the performance of residential buildings on an energy/emissions basis and awards labels from A to G based on a building's energy/emissions efficiency.

The database of this labelling scheme encompasses 2.5 million records from a total pool of 7.5 million assets nationally. As a performance label is a mandatory reporting requirement at the point of sale or lease of a building, the scheme will likely be more representative of the market compared to voluntary schemes. The local market distribution of labels also has a good spread of performance labels from A to G (see diagram below).
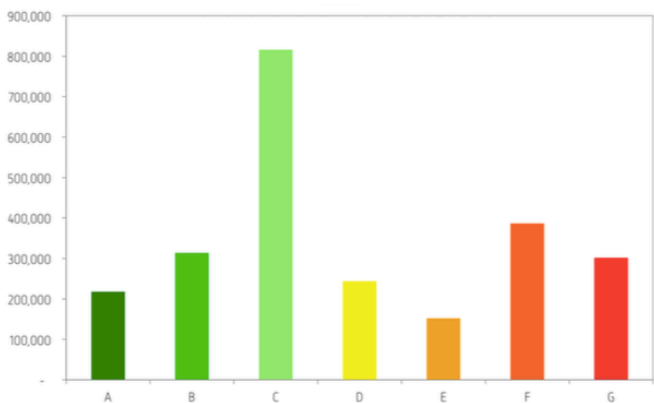
Analysis of the labeling scheme's data indicates that the highest efficiency 'A' label forms 9% of the total labels awarded (see diagram below). A verified 'A' performance label can therefore be said to align with the top 15% most energy-efficient buildings in the local market.
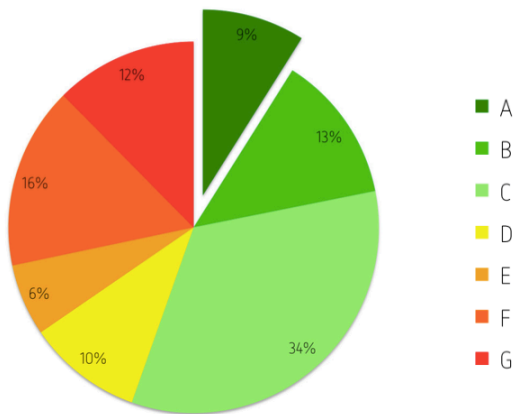
As a 'B' performance label falls in the next 13% of total labels awarded (i.e. from the top 10% to 22%), achieving the 'B' label does not guarantee alignment with the top 15% and therefore cannot serve as a proxy.