The Climate Dividends Solution Detailed Declaration

Proponent

Contributing entity: Cool Roof France (SAS CR)

Solution: Reflective paint for building roofs

Version control

Publication date: 08.09.2023

Version of the current document: 1.0

Version of the Protocol: 2.1.1

Table of content

I. Description of the project

A. Summary of the project

Optional document

Purpose: Videos, presentations, websites or any supporting material that helps understand the context and the solution.

Name of the supporting document: 220923_Présentation FR (1).pdf

Description: Presentation of the solution

Cool roofing is a concept that has been used for centuries, particularly in countries around the Mediterranean and in South America, which are accustomed to high temperatures. This type of solution is also widely developed in the United States, and even financed by certain states. The coating developed by Cool Roof France is inspired by these ancestral practices.

Our reflective paint helps to limit the absorption of solar radiation and therefore heat build-up in buildings. Our coatings reflect 90% of the sun's rays, thus limiting roof heating.

This represents an average 6°C reduction in building temperatures. In addition to thermal comfort, our solutions also protect roof coverings from solar aggression (UV, expansion, etc.), increasing their durability.

B. Summary of the claim

Climate Dividend ID of the solution	201011114
Title of the solution	Reflective paint for building roofs
Sector of the solution	Building
Contributing entity name	Cool Roof France
Selected methodology	LCA-based cool roofing *ad-hoc* guidance

Type of impact	Avoided emissions
Type of claim	Forward-looking
Carbon footprint of the contributing entity	1013 tCO_{2eq} in 2022
Year of the first claim	2023
Total claim for the first year	1485,2 tCO_{2eq}

II. Eligibility summary

A. Carbon footprint measurement

Mandatory document

Purpose: Carbon footprint assessment

Name of the supporting document: Carbon footprint assessment - Cool Roof France

Description: Carbon footprint assessment - Cool Roof France

1168 tonnes of CO_2eq in all, half of which (61%) is linked to the Cool Roof product itself (manufacture, installation, end-of-life, etc.). The remainder is mainly linked to travel (13%) and subcontracting (12%).

A few key assumptions were made to arrive at this figure:

- For home-work commutes, 25 employees in 2022 were counted, driving 20km x 2 (French average in 2019 was 13.3km), all by car, every day (so no telecommuting). with 1 out 5 carpooling (20%)

- For travel, the 150,000€ total spendings were split between plane (5%), car (50%), train, accommodation and catering (all 15% each)

- For subcontracting and temping, it's very hard to estimate at this maturity stage for the company. A monterey emission factor for the construction sector was used, including in it both workforce and materials. Given the heavier impact of materials, this is conservative and will be refined in the coming years.

Results have been calculated internally and have not been verified by an independent third party but still follow the disclosure requirements (scope 1, 2 and 3) of the Climate Dividends Association.

B. Contribution to carbon neutrality

Cool Roof France activities fall under the “Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings contribution to climate mitigation” category in the EU Taxonomy, more specifically under “installation, maintenance and repair of façade and roofing elements with a solar shading or solar control function, including those that support the growing of vegetation.”.

C. Positive climate impact

Our cool roofing products help limit the use of air-conditioning and, consequently, reduce greenhouse gas emissions, both direct emissions from cooling systems (via the halocarbons present in refrigerant gazes), and indirect emissions due to the electricity production required by air-conditioning units. Only the last savings are taken into account.

Cool Roof might also displace a future use of AC in a warming context but due to the lack of data, this is currently not taken into account.

In addition, Cool Roof France is keen to make a greater commitment to integrating eco-design into the development of its new products. In particular, our R&D work has enabled us to design a product for which we have been able to reduce the quantity of pigments and incorporate a renewable source of calcium carbonate, oyster shell, while maintaining high reflective performance.

D. Do no significant harm principle

Reducing the temperature in buildings and the underlying need for air-conditioning improves their performance in the face of climate change, while reducing the negative local impact of air-conditioning (heat zones).
Cool Roof France is keen to make a greater commitment to eco-design in the development of its new products. In particular, our R&D work has enabled us to design a product for which we have been able to reduce the quantity of pigments and incorporate a renewable source of calcium carbonate, oyster shell, while maintaining high reflective performance.

Our products have no significant impact - positive or negative - on biodiversity since they are applied in urban and peri urban areas.

E. No tie to fossil fuels

Cool Roof France has no direct link to fossil fuels activities.

F. Conditions for removed emissions

Not applicable.

III. Selected methodology

A. Relevance of the methodology

Mandatory document

Purpose: Methodology

Name of the supporting document: Sectoral guidelines - Coolroofing

Description: Ad-hoc guidelines inspired by this project and pre-validated by the Climate Dividends Association

The assessment has been made following a methodology developed by Cool Roof, which is pre-recognized by the Climate Dividends association.

The Climate Dividends Association validated the methodology used to assess our Solution. Public guidelines will be made available by the Association based on the methodology laid out in this SDD so that other projects can use the same approach, as laid out in the Climate Dividends Association.

A pre-published guidelines document has been added to this SDD.

B. Functional Unit

The main purpose of the product is to lower the building temperature by avoiding a heat transfer between the outside layer of the roof and its inside layer in order to reduce the AC use and its electricity consumption.

The selected functional unit is 1 KWh/m²/year of avoided electricity consumption due to AC use.

C. System boundary

Optional document

Purpose: System boundary representation

Name of the supporting document: 220228_FDES CoolRoof (1).pdf

Description: System boundary representation for the Solution scenario, page 5

The scenario with the solution implemented includes all relevant steps in a cradle-to-grave approach, including the manufacturing and transport of the raw materials, the components and the product, its application, its use and its end of life.

A visualization is available on the 5th page of the supporting document.

D. Cut-off

Not applicable

E. Data relevance

Geographical representativeness:

Data were derived from a combination of 2 factors: the performance of the roof insulation, based on data from the ADEME in France, with an average R (in m^2.k/W) based on the purpose of the building.

Weather based data have been normalized and taken into account through geographical areas in France (H1, H2, H3)

Temporal representativeness:

Data are recent and the most up to date that were found.

Technological representativeness:

All data used for the project scenario analysis are representative because they've been elaborated specifically for Cool Roof France activity, based on internal REX and measurements.

F.Data accuracy assessment

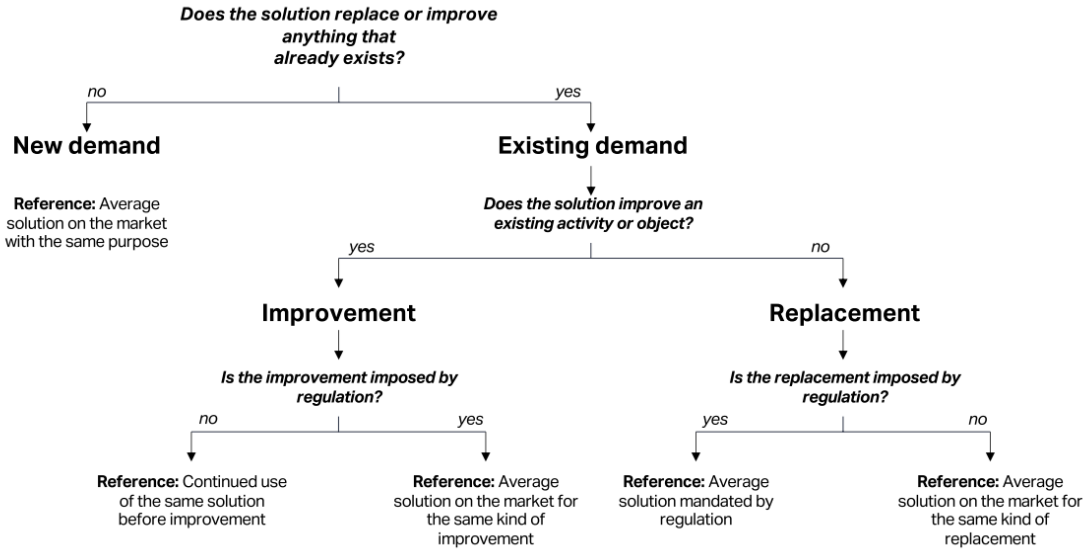
All data from the reference scenario are market average given the uniformity of electricity consumption and emission factors for a given country. The actual performance of each singular AC installation is not considered as it can't be systematically known and is very likely to not matter over the important surface that is treated each year.

All data for the Solution have been assessed from a company-specific perspective for activity data (recipes, consumptions, transport etc.) and market average for the emissions factors due to the uniformity for a given region (Western Europe or broader).

G. Baseline scenario

As Cool Roof France is only active in France, no regulation exists on reflective characteristics of the roofs. However, the need to maintain a specific temperature in buildings means the Solution is replacing an existing cooling system.

Following the WBCSD logic, the followed path corresponds to an “Existing demand’ leading to an “Improvement” of the cooling system, “not imposed by regulation”. This lead to a reference being a “Continued use of the same solution before improvement”



Decision Tree for selecting the baseline/reference scenario. Source: Guidance on Avoided Emissions: Helping business drive innovations and scale solutions toward Net Zero

H. Dynamic aspects

The model is mostly impacted by 3 factors:

- The decarbonation of the energy mix, which is not significant over the considered time period in France
- The temperature increase due to climate change, which is not considered at this stage due to the uncertainty of the future trajectories (conservative)

- The potential improvement of the AC use/performance in the future, which is not considered due to a lack of data in the context of climate change and temperature increases

IV. Impact calculation

A. Solution's scenario results

Mandatory document

Purpose: Calculation details

Name of the supporting document: 220228_FDES CoolRoof (1).pdf

Description: LCA

The product has been studied following the Life Cycle Analysis approach. Focusing on the global warming potential, the results are as follow:

- 2,8 kg CO_{2eq}/m² for the fabrication
- 0,28 kg CO_{2eq}/m² for the implementation
- 1,0 kg kg CO_{2eq}/m² for the use phase
- 9,9E-03 kg CO_{2eq}/m² for the end of life

This leads to a total of **4,1 kg/m²**.

The savings in KWh (and *in fine* in CO_{2eq}) are calculated as savings compared to the baseline and are expressed as a delta, in the next section for more clarity.

B. Baseline's scenario results

Optional document

Purpose: Justification for the baseline scenario

Name of the supporting document: BAT-EN-112-v38.pdf

Description: Certificats d'économies d'énergie

The considered baseline ('Continued use of the same solution before improvement') equates to the ongoing operation of the building in its pre-project phase, particularly in terms of energy consumption linked to air conditioning.

The savings in KWh (and *in fine* in CO_{2eq}) are calculated as savings compared to the baseline and are expressed as a delta, in the next section for more clarity.

The selected emission factor ("Average method per use") translates the marginal impact of increased seasonal consumption. This choice reflects the additional decarbonizing impact of reducing seasonal consumption peaks on the grid. This seems to be the most appropriate choice here, insofar as the use of average factors is only necessary in regulatory exercises such as Bilan Carbone. This has been confirmed by ADEME's Base Carbone recommendations and Romain Laguibre, engineer and Intraday Optimizer at EDF.

They are expressed according to the French Ministry for Ecological transition per geographical zone in KWh cumac, which are assessed over 20 years. They need to be adapted since the considered version of the product is studied over 15 years in the LCA.

A new iteration of the product is expected in 2024 and its duration will be extended to 20 years.

C. Estimated positive impacts over the lifetime of the solution

Mandatory document

Purpose: Calculation details

Name of the supporting document: Climate Dividends Calculation - Cool Roof v1.0

Description: Calculation of the impact

Results are as follows:

H1 zone avoided emission factor	13,63	kg eq. CO2/m²
H2 zone avoided emission factor	14,73	kg eq. CO2/m²
H3 zone avoided emission factor	25,81	kg eq. CO2/m²

For the sake of computation, avoided emission factors already include the attribution key and the discount rate.

V. Computation of the claim

A. Type of claim

The performance control after application is not systematic - and very rare - with our products. This means that our latest stage of involvement in the process does not allow us to make a year-on-year claim. The claim is forward looking, over a 20 years conventional period.

B. Attribution key

Cool Roof France is in charge of the formulation, manufacturing - except mixing step (called toller), which is negligible into industrial process and linked to equipment constraints and related investment at this stage - and all relevant steps for the application and customer follow-up regarding thermal advisory.

The user is often involved in the annual cleaning of the surfaces as they operate the building.

Various components suppliers are involved in the process although they do not have a material impact on the Solution.

Cool Roof France is following the Climate Dividends guidance for cool roofing and claiming 100% of the Climate Dividends.

C. Discount rate

Mandatory document

Purpose: Calculation details

Name of the supporting document: Climate Dividends Calculation - Cool Roof v1.0

A discount rate of 4% has been applied, following the Climate Dividends Protocol recommendation, over 15 years.

D. Validity period

Following the Climate Dividends Protocol rules and given Cool Roof France's involvement in the pilot phase, the Validity Period has been fixed at 3 years for the pilot phase, to recognize both the foreseeable changes in the Protocol and the efforts made by the Contributing entities joining this phase.

VI. First issuance

A. Year of the first claim

The first claim is made in 2023 based on 2022 activity data.

B. Monitored data for the first year

Mandatory document

Purpose: Proof of activity

Name of the supporting document: Invoices

Description:

In 2022, Cool Roof France painted, in terms of surface of AC equipped buildings:

H1 zone surface covered (2022)	25084	m²
H2 zone surface covered (2022)	75110	m²
H3 zone surface covered (2022)	1423	m²

C. Impact for the first year

The total result is 1485,2 tCO2eq.