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Second Party Opinion

Federal Home Loan Mortgage Corp.'s Single-Family Green MBS Framework

Oct. 15, 2024

Location: U.S. **Sector:** Financial services

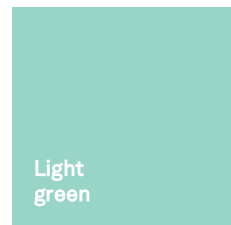
Alignment With Principles Aligned = ✓ Conceptually aligned = ○ Not aligned = ✗

✓ Green Bond Principles, ICMA, 2021 (with June 2022 Appendix 1)

See [Alignment Assessment](#) for more detail.

Primary contact

Henrik Cotran
San Francisco
+1-415-371-5018
henrik.cotran
@spglobal.com



Activities representing transition steps in the near-term that avoid emissions lock-in but do not represent long-term low-carbon climate resilient solutions.

Our [Shades of Green Analytical Approach](#) >

Strengths

Federal Home Loan Mortgage Corp.'s (Freddie Mac's) green mortgage-backed securities (MBS) support investments in renewable energy and energy efficiency, leading to greenhouse gas emissions reductions. Eligible projects include homes with renewable energy sources or that achieve specific energy efficiency performance ratings. The issuer's significant role in the secondary U.S. mortgage market encourages property developers and other financiers to direct investments toward similar projects across the country.

Weaknesses

Eligible projects may include new home construction with fossil fuel energy systems, which may lock in greenhouse gas emissions. Natural gas-based heating systems, which generate greenhouse gas emissions, are common in new construction in the U.S. These emissions can be significant when measured over the long useful life of homes, possibly offsetting a portion of the benefits of improved energy efficiency and renewable energy in eligible homes.

Areas to watch

Physical climate risk is a significant material issue it does not directly address in the financing framework. Freddie Mac's portfolio faces diverse physical climate risks including floods, wildfire, extreme weather, and sea level rise. Such impacts could undermine the benefits achieved through energy efficiency enhancements financed through the framework. We note, however, that the issuer's sustainability strategy addresses physical climate risk and potential impacts to single-family homes.

The framework lacks considerations for the embodied emissions in new construction and end-of-life materials management of the properties financed. Emissions and waste impacts from the manufacturing of building materials and waste disposal could be material if not properly managed. These issues may be addressed on an individual property basis but are not directly included in the framework.

Eligible Green Projects Assessment Summary

We assess eligible projects under issuer's green finance framework based on their environmental benefits and risks, using Shades of Green methodology.

Green Buildings

 Light green

Refinanced mortgages that fund the installation of renewable energy sources including solar and geothermal

Mortgages backed by newly constructed homes with a renewable energy source

Mortgages backed by newly constructed homes with a HERS Index Score of 55 or less

Mortgages backed by newly constructed homes with an ENERGY STAR version 3.2 or a higher version certification

See [Analysis Of Eligible Projects](#) for more detail.

Issuer Sustainability Context

This section provides an analysis of the issuer's sustainability management and the embeddedness of the financing framework within its overall strategy.

Company Description

Freddie Mac, chartered in 1970 by the U.S. Congress, is a government sponsored enterprise operating under the conservatorship of the Federal Housing Finance Agency (FHFA). Freddie Mac aims to facilitate equitable and sustainable access to homeownership and quality affordable rental housing across the U.S. in single and multi-family properties. It provides market liquidity by purchasing mortgages from qualified originators which it then securitizes and sells to investors as MBS with guarantees. The issuer does not lend directly to homebuyers. Through its support of the secondary mortgage market, Freddie Mac increases the willingness of lenders to make long-term, fixed-rate mortgages to both individual and commercial buyers, thereby increasing the affordability of housing to homeowners and renters.

Freddie Mac published its green bond framework in 2022 to encourage energy efficiency and renewable energy investments in the U.S. housing market. In 2023, single-family green MBS issuances totaled \$1.9 billion of bonds backed by 4,289 loans, compared with 2022, which totaled \$1.4 billion of bonds backed by 3,982 loans.

Material Sustainability Factors

Climate transition risk

Energy use in buildings is a major contributor to climate change, representing approximately a third of global greenhouse gas emissions on a final-energy-use basis for all building types, according to the IEA. Embedded carbon emissions from building materials and new construction may also adversely affect progress toward future low-carbon climate resiliency goals. This leaves the sector susceptible to the growing public, political, legal, and regulatory pressure to accelerate climate goals. Building occupiers may face higher energy bills as power prices rise, and higher capital expenditures as upgrades are required to accommodate the energy transition and meet more stringent efficiency standards. Incremental climate-related investments can

require significant capital outlays but will potentially reduce the risk of obsolescence due to changes in regulation or climate goals.

Physical climate risk

The geographically fixed nature of real estate assets exposes them to physical climate risks. While varied by location, these could include acute risks such as wildfires, floods, and storms, all of which are becoming more frequent and severe. Chronic risks include long-term changes in temperature and precipitation patterns and rising sea levels. These impacts could damage properties or place tenant health and safety at risk, as well as require investments to manage potential effects or, in severe cases, relocation of tenants. The aggregate impact is moderate since the type, number, and magnitude of these risks varies by region, but highly exposed regions may be subject to material physical climate risk exposure. Most participants have some insurance coverage, but it could become more difficult to secure insurance for the most exposed assets in the future, absent adaptation.

Access and affordability

Low housing availability and lack of affordable housing options can severely influence people's livelihoods, especially vulnerable, low-income populations who can face the threat of homelessness. Access and affordability are especially important for residential tenants in areas where rents can account for a large percentage of residents' incomes. Lack of accessibility and affordability of commercial properties can also hinder the sustainable growth of local communities.

Impact on communities

Properties, and by extension the owners, are inherently part of the communities in which they operate because they provide an essential service and can shape communities economically and socially. The residential sector is particularly meaningful to communities, where affordable housing and gentrification pressures can alter communities' social fabric and can be challenging to remediate.

Issuer And Context Analysis

The framework includes project categories that aim to address climate transition risk, which we consider to be the most material sustainability factor for the entity. While also material, the framework does not directly address physical climate risk.

The issuer's framework intends to support the development of single-family housing with improved energy efficiency and renewable energy sources across the U.S. As one of the largest purchasers of mortgages in the secondary market and through its financial guarantees, Freddie Mac increases the availability of funds for mortgage lending and new home purchases. The issuer's green MBS program leverages Freddie Mac's national scale to further the construction of new homes with green attributes as well as fund energy efficient home improvements with refinance proceeds. Additionally, as increasingly stringent regulations addressing the environmental performance of buildings spread in the U.S., Freddie Mac's green MBS program can help homeowners lower home operating costs and stay ahead of future legislative requirements. Since inception of the green MBS program, Freddie Mac has achieved positive environmental impact in terms of energy efficiency and avoided greenhouse gas emissions, which it reports annually in aggregate for the program. We note, however, the issuer does not report its scope 1 or 2 emissions or scope 3 financed emissions at the corporate level, nor does it have emissions reduction targets.

Freddie Mac's framework does not explicitly address physical climate risk within its loan portfolio. However, the issuer's climate strategy addresses the management of climate risk through analysis of potential impacts, strong corporate governance including a board-level

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climate risk steering committee, and increasing the physical resiliency of homes and energy and water-efficiency. Buildings throughout the U.S. face various physical climate impacts, including acute events like floods, intense storms, and wildfires, as well as chronic effects from rising sea levels. We believe incorporating criteria and mitigation measures for physical climate risk in future financings can help mitigate potential damage to buildings in the loan portfolio and ensure the full sustainability benefits of the financings are achieved. While the current framework lacks specific criteria to address these risks, it is worth noting that the issuer's climate strategy focuses on managing its acute and chronic physical risks through a combination of programs like insurance requirements, disaster relief, loan workout options, climate risk awareness, geographic diversification, and credit risk transfer to address these risks.

Freddie Mac enhances access to and affordability of housing in the U.S. by funding affordable housing through mortgage purchases and specific programs.

Considering the declining affordability of housing in the U.S., the role of entities such as Freddie Mac that support liquidity in the mortgage market is rising in importance. Freddie Mac has programs in place that aim to lower the cost of housing, including in underserved markets, including its single-family affordable housing MBS, which are backed by loans purchased through its Home Possible, Freddie Mac Refi PossibleSM and/or HFA Advantage[®] Programs. The company also expanded down payment assistance programs, such as BorrowSmart Access and HeritageOne mortgage, to increase credit access for all qualified borrowers and reduce the homeownership gap for those in underserved communities.

Alignment Assessment

This section provides an analysis of the framework's alignment to Green Bond principles.

Alignment With Principles

Aligned = ✓ Conceptually aligned = ○ Not aligned = ✕

✓ Green Bond Principles, ICMA, 2021 (with June 2022 Appendix 1)

✓ Use of proceeds

Freddie Mac commits to allocate the net proceeds related to green MBS issued under the framework exclusively to finance properties that meet certain building energy efficiency criteria and properties that use solar photovoltaic or geothermal energy systems. Please refer to the Analysis of Eligible Projects section for more information on our analysis of the environmental and social benefits of the expected use of proceeds. Please refer to the Management of Proceeds section for more information about the allocation of net proceeds.

✓ Process for project evaluation and selection

The framework describes the process for project evaluation and selection including the specific criteria for home energy performance certification and energy systems. Prior to issuance of the MBS, Freddie Mac will independently verify the existence of certification by consulting national databases to validate the existence of renewable energy systems, which we view favorably. Freddie Mac has a single-family ESG Bond Executive Committee comprising representatives from its corporate sustainability office, the single-family acquisitions division, single-family portfolio and servicing division, legal division, and enterprise risk management division which is tasked with determining eligibility criteria of eligible mortgages. The company has processes as part of its underwriting standards to identify and manage environmental and social risks related to eligible projects including climate risk-related topics and promote affordability and equity in housing.

✓ Management of proceeds

The management of proceeds from the green MBS is consistent across Freddie Mac's single-family securitization programs. Freddie Mac commits to acquire the mortgage loan from the lender if it conforms to all requirements stated in its single-family selling guide. Once acquired, Freddie Mac securitizes the loans into a fully guaranteed MBS and sells it to the general MBS investor community. To create each green MBS, the purchased green loans are placed in a separate trust and a green MBS backed by the loans in the trust is issued. The process differs from the typical use and management of proceeds associated with green bond issuances in that Freddie Mac single-family has already made the eligible investments prior to green bond issuance and uses green bond proceeds to recoup the funds. According to the issuer, there will be no unallocated proceeds.

✓ Reporting

Freddie Mac commits to reporting the volume and size of the single-family green MBS issued and select environmental impact metrics in its annual impact report. It will use proceeds from MBS issued under the framework to finance mortgage loans identified that are consistent with the criteria set forth in the framework, eliminating the need for reporting until full allocation of proceeds. The framework includes a commitment to publish certain disclosures included in the impact report including estimated avoided greenhouse gas emissions, estimated energy savings, and estimated average annual utility cost savings for homeowners. Freddie Mac has a successful track record of impact reporting for the past issuances with metrics for environmental outcomes, which we view favorably.

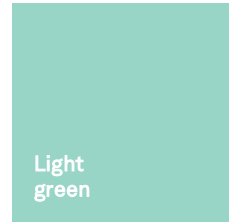
Analysis Of Eligible Projects

This section provides details of our analysis of eligible projects, based on their environmental benefits and risks, using the Shades of Green methodology.

Freddie Mac expects to allocate the majority of proceeds to the energy efficient home loan category, while the composition of its issuance will vary based on market conditions.

Overall Shades of Green assessment

Based on the project category shades of green detailed below, and consideration of environmental ambitions reflected in Freddie Mac's Green Bond Framework, we assess the framework as light green.



Activities representing transition steps in the near-term that avoid emissions lock-in but do not represent long-term low-carbon climate resilient solutions.

Our [Shades of Green Analytical Approach](#) >

Green project categories

Green Buildings

Assessment

 Light green

Description

i. Homes with renewable energy

- Freddie Mac GreenCHOICE Mortgages where borrowers used refinance proceeds to finance energy efficient home improvements. Specifically, the proceeds or portion thereof from each refinanced mortgage paid off existing debt used to finance the purchase and installation of a renewable energy source such as solar panels. Prior to MBS issuance, Freddie Mac will confirm the presence of a renewable energy source installed on the properties securing each of the mortgages included in a single-family green MBS.
- Mortgages backed by newly constructed homes with a renewable energy source. Prior to MBS issuance, Freddie Mac will confirm the presence of a renewable energy source installed on the properties securing each of the mortgages included in a single-family green MBS.







ii. Homes with an energy efficiency rating and/or energy certification

- Mortgages backed by newly constructed homes with a Home Energy Rating System (HERS) Index Score of 55 or less. Prior to MBS issuance, Freddie Mac will confirm the required score on the properties securing each of the mortgages included in a single-family green MBS using the Residential Energy Services Network (RESNET) database.
- Mortgages backed by newly constructed homes with an ENERGY STAR version 3.2 or a higher version certification. Prior to MBS issuance, Freddie Mac will confirm the required certification on the properties securing each of the mortgages included in a single-family green MBS using the RESNET database.

Analytical considerations

- Green buildings support climate change mitigation by reducing greenhouse gas emissions associated with the built environment. They may also have other benefits such as increasing energy efficiency, reducing water consumption, and reducing waste generation. However, building construction activities introduce other issues such as emissions associated with building materials and construction. We further note the framework's eligibility criteria do not exclude properties with fossil fuel heating.
- The issuer's eligibility criteria allow existing homes to qualify for the green MBS program through energy efficient home improvements to existing properties and newly constructed homes with an energy performance certification or a renewable energy system, which contribute to lowering the energy and emissions footprint of homes over their lifetime. While the performance improvements have quantitative thresholds for eligibility and represent near-term transition measures, leading to a green shade, in their current state they are not sufficiently ambitious to be fully consistent with a long-term view of a low-carbon and climate resilient future. Furthermore, the potential emissions savings from improved energy performance and use of onsite renewable energy may be curtailed by the eligibility of homes with fossil fuel heating systems, which may lock in emissions over the lifetime of the home, limiting our assessment of the green buildings category to Light green. Additionally, the criteria do not address embodied emissions and physical climate risks, which could be material and undermine the positive impact of eligible projects.
- Renewable energy systems contribute directly to greenhouse gas emissions reduction within the built environment. While we view investments in solar and geothermal systems as Dark Green due to the central role of renewable energy in the green transition, the issuer will use green proceeds to finance the full value of the eligible property loans and not solely the energy systems. Such investments may offer relatively limited energy use reduction benefits in relation to the total energy use of a home, leading to a Light Green shade. We further note that the total energy use reduction will depend on other characteristics of the individual property and will likely not be uniform across states.
- Freddie Mac's energy efficiency rating criteria include homes with an Energy Rating Index (ERI) HERS score of 55 or below and those that meet the U.S. Environmental Protection Agency's EnergyStar 3.2 criteria. Homes with lower scores under the HERS index are considered more efficient. In our view, these criteria are sufficiently ambitious because energy efficiency requirements are expected to achieve a minimum energy savings of 10% over state energy codes in alignment with the 2021 International Energy Conservation Code (IECC) guidelines, the most recent version of that standard. Many homes with a HERS rating on the property will likely be more efficient than the average newly constructed home, supporting the case that homes with an eligible HERS score are often more efficient than state building code requirements for new homes. Additionally, according to an analysis commissioned by the issuer, the HERS scores for homes modeled to adhere to current building codes for each U.S. state compared with model homes using the 2006 IECC baseline used in the HERS index would all score substantially higher than Freddie Mac's 55 threshold. This further supports the case that homes that receive a HERS score of 55 or less are more efficient than the average newly built home in the U.S.
- Freddie Mac may create new single-family green MBS securities by resecuritizing previously issued single-family green MBS or by commingling green MBS with green MBS issued by the Federal National Mortgage Association (Fannie Mae). Such Fannie Mae securities would include only eligible mortgages that meet the criteria under Fannie Mae's single-family green bond framework. We believe this practice contributes support for single-family green housing in the U.S. as it further increases the investor base for green MBS. Importantly, the environmental benefits of such resecuritizations will be reported separately for Fannie and Freddie's underlying mortgages in the event they are commingled.
- The climate and environmental impacts of home construction and the associated construction materials supply chain could have detrimental effects on the climate and land use, including forest and biodiversity impacts. The framework does not directly address these environmental risks.

S&P Global Ratings' Shades of Green

Assessments					
Dark green	Medium green	Light green	Yellow	Orange	Red
Description					
Activities that correspond to the long-term vision of an LCCR future.	Activities that represent significant steps toward an LCCR future but will require further improvements to be long-term LCCR solutions.	Activities representing transition steps in the near-term that avoid emissions lock-in but do not represent long-term LCCR solutions.	Activities that do not have a material impact on the transition to an LCCR future, or, Activities that have some potential inconsistency with the transition to an LCCR future, albeit tempered by existing transition measures.	Activities that are not currently consistent with the transition to an LCCR future. These include activities with moderate potential for emissions lock-in and risk of stranded assets.	Activities that are inconsistent with, and likely to impede, the transition required to achieve the long-term LCCR future. These activities have the highest emissions intensity, with the most potential for emissions lock-in and risk of stranded assets.
Example projects					
 Solar power plants	 Energy efficient buildings	 Hybrid road vehicles	 Health care services	 Conventional steel production	 New oil exploration

Note: For us to consider use of proceeds aligned with ICMA Principles for a green project, we require project categories directly funded by the financing to be assigned one of the three green Shades.

LCCR--Low-carbon climate resilient. An LCCR future is a future aligned with the Paris Agreement; where the global average temperature increase is held below 2 degrees Celsius (2 C), with efforts to limit it to 1.5 C, above pre-industrial levels, while building resilience to the adverse impact of climate change and achieving sustainable outcomes across both climate and non-climate environmental objectives. Long term and near term--For the purpose of this analysis, we consider the long term to be beyond the middle of the 21st century and the near term to be within the next decade. Emissions lock-in--Where an activity delays or prevents the transition to low-carbon alternatives by perpetuating assets or processes (often fossil fuel use and its corresponding greenhouse gas emissions) that are not aligned with, or cannot adapt to, an LCCR future. Stranded assets--Assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities (as defined by the University of Oxford).

Related Research

- [Analytical Approach: Second Party Opinions: Use of Proceeds](#), July 27, 2023
- [FAQ: Applying our Integrated Analytical Approach for Use-of-Proceeds Second Party Opinions](#), July 27, 2023
- [Analytical Approach: Shades of Green Assessments](#), July 27, 2023
- [S&P Global Ratings ESG Materiality Maps](#), July 20, 2022

Analytical Contacts

Primary contact

Henrik Cotran
San Francisco
+1-415-371-5018
henrik.cotran
@spglobal.com

Secondary contacts

Alán Bonilla
San Francisco
+1-415-371-5021
Alan.bonilla
@spglobal.com

Bryan Popoola
Washington, D.C.
+1-202-615-5962
bryan.popoola
@spglobal.com

Research contributor

Sachin Powani
CRISIL Global Analytical Center, an S&P affiliate

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