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FEDERAL HOUSING FINANCE AGENCY

12 CFR Parts 1206 and 1240

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Office of Federal Housing Enterprise Oversight

12 CFR Part 1750

RIN 2590-AA95

Enterprise Capital Requirements

AGENCIES: Federal Housing Finance Agency; Office of Federal Housing Enterprise Oversight.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Federal Housing Finance Agency (FHFA or the Agency) is proposing a new regulatory capital framework for the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) (collectively, the Enterprises), which includes a new framework for risk-based capital requirements and two alternatives for an updated minimum leverage capital requirement. The risk-based framework would provide a granular assessment of credit risk specific to different mortgage loan categories, as well as market risk, operational risk, and going-concern buffer components. The proposed rule would maintain the statutory definitions of core capital and total capital.

FHFA has suspended the Enterprises' capital requirements since the beginning of conservatorship, and FHFA plans to continue this suspension while the Enterprises remain in conservatorship. Despite this suspension, FHFA believes it is appropriate to update the Agency's standards on Enterprise capital requirements to provide transparency to all stakeholders about FHFA's supervisory view on this topic. In addition, while the Enterprises are in conservatorship, FHFA will expect Fannie Mae and Freddie Mac to use assumptions about capital described in the rule's risk-based capital requirements in making pricing and other business decisions. Feedback on this proposed rule will also inform FHFA's views in evaluating Enterprise business decisions while the Enterprises remain in conservatorship.

DATES: Comments must be received on or before **[INSERT DATE 60 DAYS FROM THE DATE OF PUBLICATOIN IN THE FEDERAL REGISTER].**

ADDRESSES: You may submit your comments on the proposed rule, identified by regulatory information number (RIN) 2590-AA95, by any one of the following methods:

- *Agency website: www.fhfa.gov/open-for-comment-or-input*.
- *Federal eRulemaking Portal*: http://www.regulations.gov. Follow the instructions for submitting comments. If you submit your comment to the Federal eRulemaking Portal, please also send it by e-mail to FHFA at RegComments@fhfa.gov to ensure timely receipt by FHFA. Include the following information in the subject line of your submission: Comments/RIN 2590-AA95.
- *Hand Delivered/Courier*: The hand delivery address is: Alfred M. Pollard, General Counsel, Attention: Comments/RIN 2590-AA95, Federal Housing

Finance Agency, Eighth Floor, 400 Seventh Street, SW, Washington, D.C. 20219. Deliver the package at the Seventh Street entrance Guard Desk, First Floor, on business days between 9 a.m. and 5 p.m.

- *U.S. Mail, United Parcel Service, Federal Express, or Other Mail Service*: The mailing address for comments is: Alfred M. Pollard, General Counsel, Attention: Comments/RIN 2590-AA95, Federal Housing Finance Agency, Eighth Floor, 400 Seventh Street, SW, Washington, D.C. 20219. Please note that all mail sent to FHFA via U.S. Mail is routed through a national irradiation facility, a process that may delay delivery by approximately two weeks. For any time-sensitive correspondence, please plan accordingly.

FOR FURTHER INFORMATION CONTACT: Naa Awaa Tagoe, Senior Associate Director, Office of Financial Analysis, Modeling & Simulations, (202) 649-3140, *NaaAwaa.Tagoe@fhfa.gov*; Andrew Varrieur, Associate Director, Office of Financial Analysis, Modeling & Simulations, (202) 649-3141, *Andrew.Varrieur@fhfa.gov*; or Miriam Smolen, Associate General Counsel, Office of General Counsel, (202) 649-3182, *Miriam.Smolen@fhfa.gov*. These are not toll-free numbers. The mailing address is: Federal Housing Finance Agency, 400 Seventh Street, SW, Washington, D.C. 20219. The telephone number for the Telecommunications Device for the Hearing Impaired is (800) 877-8339.

SUPPLEMENTARY INFORMATION:

Comments

FHFA invites comments on all aspects of the proposed rule and will take all comments into consideration before issuing a final rule. Copies of all comments will be

posted without change, and will include any personal information you provide such as your name, address, e-mail address, and telephone number, on the FHFA website at *http://www.fhfa.gov*. In addition, copies of all comments received will be available for examination by the public through the electronic rulemaking docket for this proposed rule also located on the FHFA website.

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I. Introduction

A. Rationale for Proposing a Capital Rule

FHFA's predecessor agency, the Office of Federal Housing Enterprise Oversight (OFHEO), last adopted capital rules for Fannie Mae and Freddie Mac in 2001. The Housing and Economic Recovery Act of 2008 (HERA) gave FHFA greater authority to determine capital standards for the Enterprises. Each Enterprise was placed into conservatorship shortly after the enactment of HERA. FHFA suspended the statutory capital classifications and regulatory capital requirements during conservatorship, due to the Enterprises having entered the control of the conservator. Today, the Senior Preferred Stock Purchase Agreements (PSPAs) with the U.S. Department of the Treasury (Treasury Department) limit each Enterprise's ability to hold capital.

Prior to proposing this rule, FHFA has taken other steps to assess adequate capital assumptions for the Enterprises while they operate in conservatorship. Despite the Enterprises' limited ability to hold capital, FHFA identified the need to develop an aligned risk measurement framework to better evaluate each Enterprise's business decisions while they are in conservatorship. FHFA's purpose in pursuing this effort was to ensure that the Enterprises make prudent business decisions when pricing transactions and managing their books of business. The initial framework developed as a result of this effort is called the Conservatorship Capital Framework (CCF) and was put into place in 2017 under FHFA's oversight as conservator.

The CCF is the foundation for FHFA's proposed capital regulation. Although the capital requirements in the rule would need to be suspended after adoption of a final rule because the Enterprises remain in conservatorship and are supported by the Treasury

Department through the PSPAs which limit their ability to retain capital, the updated rule would achieve several objectives. The proposed rule serves to transparently communicate FHFA's views as a financial regulator about capital adequacy for the Enterprises under current statutory language and authorities. The fact that FHFA has suspended the Enterprises' capital requirements does not eliminate FHFA's responsibility, as a prudential regulator, to articulate a view about Enterprise capital requirements. It also prepares the Agency to modify the capital standards for future housing finance entities, even if they are significantly different from the Enterprises, upon completion of housing finance reform by Congress and the Administration, instead of starting from the outdated OFHEO rules. In addition, publication of this proposed rule will enable the public to provide input on these important issues.

While the Enterprises currently operate under the PSPAs with the Treasury Department, the proposed rule does not take the PSPAs into account. The proposed risk-based capital requirements are designed to establish the necessary minimum capital for the Enterprises to continue operating after a stress event comparable to the recent financial crisis. In a reformed housing finance system, policymakers would need to determine whether to retain support like that provided by the PSPAs for future housing finance entities.

In proposing this rule, FHFA is not attempting to take a position on housing finance reform. Similarly, this proposed rule is not a step towards recapitalizing the Enterprises and administratively releasing them from conservatorship. FHFA's position continues to be that it is the role of Congress and the Administration to determine the

future of housing finance reform and what role, if any, the Enterprises should play in that system.

Publication of this proposed rule will assist with FHFA's administration of the conservatorships of Fannie Mae and Freddie Mac by potentially refining the CCF. As with other proposed rules, the rulemaking provides the public with an opportunity to comment on the proposed capital requirements. As FHFA reviews the public comments and works to finalize the rule, the Agency expects to adopt material and appropriate changes into the existing CCF.

B. Overview of the Proposed Rule

FHFA is proposing a regulatory capital framework for the Enterprises that would implement two components: a new framework for risk-based capital requirements and a revised minimum leverage capital requirement specified as a percentage of total assets and off-balance sheet guarantees. FHFA's proposed rule is based on a capital framework that is generally consistent with the regulatory capital framework for large banks, but reflects differences in the charters, business operations, and risk profiles of the Enterprises. The proposed rule uses concepts from the Basel framework with appropriate modifications for the Enterprises. FHFA's proposed framework recognizes that the Enterprises are monoline businesses with assets and guarantees heavily concentrated in residential mortgages with risk profiles that differ from large diversified banks.

In order to fulfill their charter responsibilities of providing stability to the secondary mortgage market, the Enterprises must remain as functioning entities both during and after a period of severe financial stress. To achieve this objective, the

proposed risk-based capital framework targets a risk-invariant minimum capital level after surviving a stress event, referred to as the going-concern buffer.

The Enterprises' assets and operations are exposed to different types of risks. The proposed risk-based capital framework would address the key exposures by explicitly covering credit risk, including counterparty risk, as well as market risk and operational risk. The proposed framework would define the requirements by risk factor for each key group of the Enterprises' assets and guarantees.

In establishing risk-based capital requirements and updating the minimum leverage requirement, FHFA is seeking to ensure that the two sets of requirements complement one another. For the risk-based capital requirements, FHFA is proposing a comprehensive framework that provides a detailed assessment of the Enterprises' risk of incurring unexpected losses. Instead of applying the Basel standardized approach of a 50 percent risk weight for all mortgage assets regardless of different product features or terms, FHFA's proposed risk-based capital requirements would use a series of approaches, which include base grids, risk multipliers, assessments of counterparty risk, and capital relief due to credit risk transfer transactions, to produce tailored capital requirements for mortgage loans, guarantees, and securities. These asset-specific capital requirements would then be applied across each Enterprise's book of business to produce total risk-based capital requirements.

By differentiating between the types and features of mortgage assets, guarantees, and securities purchased by the Enterprises, FHFA believes the proposed risk-based capital requirements would represent a substantial step forward in articulating the relative risk levels of mortgage loans and quantifying the associated capital requirements for the

Enterprises.

In coordination with the proposed risk-based capital requirements, FHFA is also proposing two alternative minimum leverage capital requirements. Each of these alternatives would update the existing minimum leverage requirements established by statute for the Enterprises. Under the first alternative, the "2.5 percent alternative," the Enterprises would be required to hold capital equal to 2.5 percent of total assets (as determined in accordance with generally accepted accounting principles (GAAP)) and off-balance sheet guarantees related to securitization activities, regardless of the risk characteristics of the assets and guarantees or how they are held on the Enterprises' balance sheets. Under the second alternative, the "bifurcated alternative," the Enterprises would be required to hold capital equal to 1.5 percent of trust assets and 4 percent of non-trust assets, where trust assets are defined as Fannie Mae mortgage-backed securities or Freddie Mac participation certificates held by third parties and off-balance sheet guarantees related to securitization activities, and non-trust assets are defined as total assets as determined in accordance with GAAP plus off-balance sheet guarantees related to securitization activities minus trust assets. The Enterprises' retained portfolios would be included in non-trust assets. In proposing these two alternatives, FHFA seeks to obtain feedback about how to balance the following considerations.

On the one hand, FHFA seeks to establish a minimum leverage requirement that would serve as a backstop capital requirement to guard against the potential that the risk-based capital requirements would be underestimated or would become too low in the future following periods of sustained, strong economic conditions. A meaningful minimum leverage requirement would also guard against the risk that the risk-based

capital measure significantly underestimates necessary capital levels. An underestimation of capital could occur for different reasons, including the potential for model estimation error, the possibility that loans perform differently than similar loans did in the historical periods used to estimate the models, the emergence of new products that are inadequately capitalized because of a lack of historical performance data as occurred during the financial crisis, and the possibility that the proposed risk-based capital approach would overestimate the amount of capital relief attributed to CRT transactions. A leverage backstop would also protect against a reduced risk-based capital measure during times of overly aggressive house price appreciation and low unemployment, which would result in lower capital requirements and the release of capital when loan-to-value ratios fall. In the absence of a meaningful minimum leverage capital requirement, aggressively low risk-based capital requirements could result in the Enterprises facing difficulty raising capital in worsening economic conditions when capital is most needed. A leverage backstop would also mitigate the risk of rapid deleveraging for institutions that depend on short-term funding, though, as discussed herein, this rationale applies more to large depository institutions than to the Enterprises. Lastly, a leverage backstop would provide a floor beyond the proposed going-concern buffer and operational risk capital requirement for the amount of capital released as a result of credit risk transfer transactions.

On the other hand, FHFA also seeks to avoid setting a minimum leverage requirement that is too high and would regularly eclipse the risk-based capital requirements, which could have adverse consequences. Because leverage requirements generally require firms to hold the same amount of capital for any type of asset

irrespective of the asset's risk profile, a binding leverage requirement could incent firms to hold riskier assets on their balance sheets. Instead of reducing risk to the Enterprises, a high leverage requirement that surpasses risk-based capital requirements could encourage the Enterprises to forgo lower-risk assets in favor of those with higher-risks because the same capital charge would apply for either asset. In addition, a binding leverage requirement could lead an Enterprise to reduce or halt its CRT transactions. This could occur because the proposed risk-based capital standard provides capital relief for CRT transactions, whereas the minimum leverage requirements included in this proposed rule do not. As a result, a binding leverage ratio could reduce an Enterprise's economic incentive to engage in these transactions, potentially resulting in greater concentration of credit risk at the Enterprise.

Each of these proposed capital requirements are discussed in section II.

C. Legislative Authority and History

Effective July 30, 2008, HERA created FHFA as a new independent agency of the Federal Government. The part of HERA that applies to FHFA is the Federal Housing Finance Regulatory Reform Act of 2008,[1] which amended the Federal Housing Enterprises Financial Safety and Soundness Act of 1992 (Safety and Soundness Act or statute).[2] The 1992 statute created OFHEO, one of FHFA's predecessor agencies.

HERA transferred to FHFA the supervisory and oversight responsibilities of OFHEO over Fannie Mae and Freddie Mac. HERA also transferred the oversight responsibilities of the Federal Housing Finance Board over the Federal Home Loan

[1] Pub. L. 110-289, Div. A, July 30, 2008, 122 Stat. 2659.
[2] Pub. L. 102-550, Title XIII, October 28, 1992, 106 Stat. 3941.

Banks (Banks) and the Office of Finance, which acts as the Banks' fiscal agent, and certain functions of the Department of Housing and Urban Development (HUD) with respect to the affordable housing mission of the Enterprises. In addition to transferring supervisory responsibilities to FHFA, HERA gave the Agency greater authority than OFHEO had to determine the capital standards for the Enterprises.

1992 Statute and OFHEO Risk-Based Capital Rulemaking

As originally enacted, the 1992 statute specified a minimum capital requirement in the form of a leverage ratio for the Enterprises and a highly prescriptive approach to risk-based capital requirements for the Enterprises. The statute required that OFHEO establish a risk-based capital stress test by regulation such that each Enterprise could survive a ten-year period with large credit losses and large movements in interest rates. The statute specified two interest rate scenarios, with falling and rising rates, and provided the interest rate paths for each scenario. The statute set parameters for a benchmark loss experience for default and loss severity, but provided OFHEO discretion to determine other aspects of the capital test.

To implement this statutory language, OFHEO developed a risk-based capital standard for the Enterprises, and issued a series of Federal Register notices to solicit public comment. Initially, the Agency issued an Advance Notice of Proposed Rulemaking (ANPR) to seek comment on a number of issues related to the rule's development. Those comments were considered when OFHEO subsequently developed two Notices of Proposed Rulemaking (NPRs). The first NPR contained the methodology for identifying the benchmark loss experience and the use of OFHEO's House Price Index (HPI). The second NPR proposed the remaining specifications of the stress test.

OFHEO also issued a notice to give interested parties an opportunity to respond to comments received by the Agency from the second NPR. OFHEO's Final Rule included consideration of the comments received in the first and second NPRs, as well as the reply comments.

Suspension of Capital Requirements During Conservatorship and Existing Regulatory Capital Requirements

On September 6, 2008, the Director of FHFA appointed FHFA as the conservator for each Enterprise, pursuant to authority in the Safety and Soundness Act. Conservatorship is a statutory process intended to preserve and conserve the assets of the Enterprises and to put the companies in a sound and solvent condition. FHFA suspended the capital classifications and the regulatory capital requirements applicable at that time, and they remain suspended.[3]

Although the capital requirements are suspended while the Enterprises are in conservatorship, this section reviews the Enterprise capital standards in the prior OFHEO rule, which, though suspended, has not yet been replaced.[4] The OFHEO regulations on the Enterprises' minimum capital (leverage ratio) and risk-based capital requirements would be superseded by this rulemaking.

The Enterprises are required by statute to maintain the capital necessary to meet certain minimum leverage and risk-based capital levels. Under HERA, the Enterprises continue to operate under the regulations issued by OFHEO until those regulations are superseded by regulations issued by FHFA. The OFHEO rule's minimum leverage and

[3] Press Release, "FHFA Announces Suspension of Capital Classifications During Conservatorship," Oct. 9, 2008.
[4] 12 CFR part 1750.

risk-based capital requirements are applied simultaneously, but are not additive. The Enterprises must meet both requirements in order to be classified as adequately capitalized.

If any Enterprise is classified as other than adequately capitalized, it triggers a series of prompt corrective actions. Since the ability of the Enterprises to obtain adequate capital was fatally impaired due to the financial crisis, capital support for the Enterprises was provided by the PSPAs with the Treasury Department when the Enterprises were put into conservatorship. Accordingly, FHFA suspended the capital classifications as well as the OFHEO capital regulation.

The minimum leverage capital requirement specified in the Safety and Soundness Act is equal to 2.5 percent of on-balance sheet assets and 0.45 percent of off-balance sheet obligations. These levels are applied to the retained portfolio and guarantee business, respectively.[5] The statute, today as in 1992, requires the minimum leverage capital requirement to be met with core capital, which per the statute is composed of outstanding common stock (par value and paid-in capital), retained earnings, and outstanding non-cumulative perpetual preferred stock.

The statute, as amended by HERA, also requires the Enterprises to meet a risk-based capital standard, to be prescribed by FHFA by regulation. The OFHEO capital rule contains a stress test, which is to be applied to each Enterprise's book of business. As prescribed by the 1992 statute, the stress test is designed such that each Enterprise could survive a ten-year period with large credit losses and large movements in interest rates.

[5] Due to changes in GAAP after the statute was enacted, guaranteed mortgage-backed securities held by third parties are now consolidated by each Enterprise onto its balance sheet. However, for minimum leverage capital purposes, FHFA has interpreted the statute as continuing to apply the 0.45 percent capital requirement to these loans. *See* Regulatory Interpretation 2010-RI-1, Jan. 12, 2010.

There are two interest rate scenarios, with falling and rising rates, and interest rate paths for each scenario. The test has parameters for a benchmark loss experience for default and loss severity, and uses the House Price Index produced by OFHEO (which FHFA now produces).

The statute, both in 1992 and today, requires the risk-based capital requirement to be met with total capital, which is the sum of core capital and a general allowance for foreclosure losses, plus "[a]ny other amounts from sources of funds available to absorb losses incurred by the enterprise, that the Director by regulation determines are appropriate to include in determining total capital" (a determination that OFHEO never made).

The statute, both in 1992 and today, defines a critical capital level, which is the amount of core capital below which an Enterprise is classified as critically undercapitalized. The critical capital level is 1.25 percent of on-balance sheet assets (retained portfolio) and 0.25 percent of off-balance sheet obligations (guarantee business).

Under the statute, both in 1992 and today, an Enterprise is considered adequately capitalized when core capital meets, or exceeds, the minimum capital requirement and total capital meets, or exceeds, the risk-based capital requirement. An Enterprise is considered undercapitalized if it fails the risk-based requirement, but meets the minimum capital requirement. It is significantly undercapitalized when it fails both the minimum and risk-based capital requirements, but still has enough critical capital. It becomes critically undercapitalized when it fails both the minimum and risk-based capital requirements, as well as the critical capital requirement.

If an Enterprise becomes undercapitalized or significantly undercapitalized, under the prompt corrective action framework in the statute the Enterprise is subject to heightened supervision. This includes being required to submit a capital restoration plan, and having restrictions imposed on capital distributions and asset growth. A significantly undercapitalized Enterprise must also improve management through a change in the board of directors or executive officers. If an Enterprise becomes critically undercapitalized, then the Enterprise may be placed in conservatorship or receivership.

HERA Amendments on Enterprise Capital Requirements

FHFA's broader capital regulation authority provided by the amendments made by HERA creates an opportunity for FHFA to develop a new risk-based capital standard and an increased minimum leverage requirement. FHFA's authority to establish risk-based capital requirements was amended under HERA by removing the specific stress test requirements that had been mandated for OFHEO's rulemaking and providing FHFA with the authority to establish risk-based capital requirements "to ensure that the enterprises operate in a safe and sound manner, maintaining sufficient capital and reserves to support the risks that arise in the operations and management of the enterprises."[6] While HERA did not change the minimum leverage ratio levels specified in the statute, the legislation provided FHFA with authority to increase the minimum leverage requirement above those levels as necessary,[7] and to temporarily increase the minimum capital level for a regulated entity.[8] FHFA issued a final regulation to

[6] 12 U.S.C. 4611(a)(1).
[7] 12 U.S.C. 4612(c).
[8] 12 U.S.C. 4612(d), implemented at 12 CFR part 1225.

implement the temporary increase authority in 2011.[9] Additionally, as amended by HERA, the statute provides FHFA with the authority to establish capital or reserve requirements for specific products and activities as deemed appropriate by the Agency.[10] HERA also enhanced the Safety and Soundness Act's prompt-corrective-action provisions and added the agency's conservatorship and receivership authorities.

Dodd-Frank Act Stress Tests

Section 165[11] of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010[12] (Dodd-Frank Act) required the capital adequacy stress testing of large financial companies with assets over $10 billion that are supervised by a federal regulator. FHFA issued regulations to implement this requirement.[13] However, the Dodd-Frank Act Stress Test is a reporting requirement, not a capital requirement. The purpose of the test is to assist in the evaluation of capital sufficiency, but it does not set any capital requirements for the Enterprises.

D. The Enterprises' Pre-Conservatorship Business and the Financial Crisis

Pre-Conservatorship Business

The Enterprises' business model of supporting single-family and multifamily housing consists of both a guarantee business and a portfolio business. In the portfolio

[9] 76 FR 11668 (March 3, 2011).
[10] 12 U.S.C. 4612(e).
[11] 12 U.S.C. 5365(i). The stress testing requirements of the Dodd-Frank Act have been adjusted by Title IV of the Economic Growth, Regulatory Relief, and Consumer Protection Act, Pub. L. 115-174, May 24, 2018, 132 Stat. 1356, to, among other things, reflect new asset thresholds and to reduce from 3 to 2 the number of testing scenarios. The effect, if any, of the new requirements will be considered and accounted for in any final rule FHFA issues.
[12] Pub. L. 111-203, July 21, 2010, 124 Stat. 1376.
[13] 12 CFR part 1238.

business, the Enterprises issue debt and invest the proceeds in whole loans and mortgage-backed securities. The mortgage securities held in the retained portfolio were traditionally the Enterprises' own guaranteed mortgage-backed securities. In the years leading up to the crisis, however, the Enterprises became active participants in the market for private-label mortgage securities, which exposed the Enterprises to significant fair value losses.

The Enterprises earned net interest income on the difference between rates on the mortgage securities (interest income) and the debt costs (interest expense) on their retained portfolio business. The net interest income was at risk since longer-term assets were funded by shorter-term debt. The Enterprises managed this duration mismatch using interest-rate swaps and "swaptions" in the derivatives market. By holding leveraged positions in mortgage securities and funding them with shorter-term debt, the Enterprises took on substantial market risks, in addition to supporting core business functions. Sources of this market risk include the risk of loss from changes in interest rates and the basis risk associated with imperfect hedging.

The Enterprises also used the retained portfolios to hold whole loans that could not be easily securitized, such as certain affordable loans and loans being reworked through loss mitigation. In addition, the retained portfolios were used to support the cash window for smaller lenders. This use of the retained portfolio supported core business functions and helped the Enterprises to fulfill their mission. However, during the pre-conservatorship period, the purchase of mortgage securities dominated the portfolio business.

In the guarantee business, private lenders participated in the mortgage-backed security swap program and cash window program. Through these programs, private lenders originated loans according to Enterprises' standards, and either exchanged those loans for securities that were guaranteed by either Enterprise, or sold loans directly to the Enterprises for cash. When lenders in the swap program received guaranteed mortgage-backed securities, they often sold those securities to replenish funds, enabling the lenders to make more loans. When smaller lenders sold their loans to the Enterprises for cash, the price they received was the market price for the loans less an implied guarantee fee. The Enterprises were able to quickly aggregate the cash window purchases from multiple smaller lenders and issue the guaranteed securities with a larger pool size directly. In addition, loans purchased through Freddie Mac's cash window or Fannie Mae's whole loan conduit (collectively referred to henceforth as the cash window) noted above were aggregated and later securitized. In both the swap and cash programs, the Enterprises assumed the credit risk on the loans in exchange for a guarantee fee. The lenders earned income through originating and servicing loans, and selling MBS they received from the Enterprises; and private investors assumed the market risk from price changes driven by movements in interest rates.

Growth in Subprime and Other High Risk Loans

In the years leading up to the financial crisis, competition in the primary mortgage market for revenue and market share led mortgage lenders to relax underwriting standards and originate riskier mortgages to less creditworthy borrowers. Many of these loans were packaged into subprime and "Alt-A" private-label securities that were sold without backing from the Enterprises. Investor appetite for these loans enabled lenders to

lower standards for underwriting, including credit scores, which increased the potential pool of borrowers and helped to drive up house prices. Consequently, subprime mortgages were given to borrowers with lower credit scores and low down payments.

In addition, Alt-A loans were increasingly offered to borrowers considered riskier than "A" or prime paper and less risky than subprime. Alt-A mortgages were characterized by less than the full documentation by the lender of a borrower's income and assets, which markedly increased the credit risk and fueled speculation. These high-risk loans often had features that made it increasingly difficult for borrowers to repay the loans, including low teaser rates that would reset, balloon payments, prepayment penalties, interest-only periods, and negative amortization. Weak underwriting standards during this period often included inflated appraised values, which compounded the problems. In addition, many loans had "risk-layering" of more than one higher risk attribute, significantly increasing credit exposures.

The private-label securities were divided into tranches with different terms and credit risk attributes. Prior to 2003, the Enterprises maintained relatively high underwriting standards. However, as the Enterprises faced declining market shares of the total mortgage market with the growth of the private-label market, the Enterprises sought to increase business revenue by buying significant amounts of the AAA-rated tranches of private-label subprime and Alt-A securities for their retained portfolios. In addition, the Enterprises guaranteed increasingly larger amounts of Alt-A whole mortgage loans with non-traditional credit standards from lenders through bulk sales, outside of the normal business standards for the guarantee business.

2007 – 2008 Financial Crisis

The financial crisis began in 2007 with stresses in the subprime and Alt-A mortgage market. The crisis grew to other financial sectors in the United States and globally. Several large financial firms failed and others had to be supported through government intervention. After the crisis, the Dodd-Frank Act was enacted in the United States, and the Basel III capital standards were adopted globally to promote financial stability.

In the build-up to the crisis, growth in subprime and Alt-A lending drove house prices increasingly higher. The overvaluation of non-traditional mortgages was based on the assumption that house prices would continue to rise. However, as the market for those loans began to weaken, house prices started to decline nationwide, further exacerbating the problems and spreading stress to markets beyond the housing sector. By September 2008 when the Enterprises entered conservatorship, the average U.S. house price had declined by over 20 percent from its mid-2006 peak. Many borrowers were faced with underwater mortgages such that the unpaid balances of the loans exceeded the value of the homes. The economic stress affected not only the subprime and Alt-A mortgages in the Enterprises' guarantee book, but also the mortgages in the guarantee book that had been approved under more traditional mortgage underwriting standards.

The financial crisis had a major impact on the value of the private-label securities held by the Enterprises in their retained portfolios. From 2002 to 2008, Fannie Mae purchased $240 billion of subprime and Alt-A private-label single-family mortgage securities. From 2006 to 2008, Freddie Mac purchased $160 billion of these securities.[14]

[14] *See* FHFA's Report to Congress for private-label security holdings, serious delinquency rate, and credit loss data.

When the financial crisis hit, the Enterprises suffered sharp declines in the value of these securities, due to weakening collateral and credit rating downgrades.

The SFAS 157 accounting standard issued in 2006 for fair value accounting required that tradable assets such as mortgage securities that were purchased with the intent to resell in either a short time frame (trading securities) or in a longer time frame (available-for-sale securities) be valued according to their current market value rather than historic cost or some future expected value. When the market for private-label securities collapsed, the value losses had a major financial effect on the holders of these securities. Upon entering conservatorship, the Enterprises ceased buying both subprime and Alt-A securities, and began to wind down those positions.

In addition to the private-label security losses in the portfolio, the guarantee book experienced severe stress from the financial crisis. Fannie Mae's single-family serious delinquency rate rose from 0.65 percent in 2006 to 2.42 percent in 2008, peaking at 5.38 percent in 2009. Subsequently, the delinquency rate fell below 2.00 percent by 2014 and to 1.24 percent at the end of 2017. Freddie Mac's delinquency rate rose from 0.42 percent in 2006 to 1.83 percent in 2008, peaking at 3.98 percent in 2009. At the end of 2017, ten years after the start of the financial crisis, Freddie Mac's delinquency rate had fallen to 1.08 percent.

The serious delinquency rates from the financial crisis translated into high credit losses for the Enterprises and a sharp increase in real estate owned properties (REO)[15] – properties acquired through foreclosure. Fannie Mae's credit losses as a percent of its

[15] When a borrower is unable to repay a mortgage, and a loan goes through the foreclosure process, the lender takes possession of the property that was pledged as collateral. When the property is conveyed to an Enterprise, it becomes real estate owned (REO) on the Enterprise's book.

guarantee book increased from 0.02 percent in 2006 to a peak of 0.77 percent in 2010. REO increased from 0.09 percent in 2006 to a peak of 0.53 percent in 2010. Freddie Mac experienced a similar loss and REO experience. Its credit losses grew from 0.01 percent in 2006 to a peak of 0.72 percent in 2010, and REO grew from 0.04 percent to 0.36 percent over this period.

As asset prices fell and other large financial firms failed, it became increasingly difficult for the Enterprises to issue debt to fund their retained portfolios, to raise new capital to cover the mark-to-market losses from private-label securities, and to build reserves for projected credit losses from credit guarantees. In the financial crisis, it became apparent that the Enterprises were not adequately capitalized to absorb these types of shocks.

In response to the substantial deterioration in the housing market that left Fannie Mae and Freddie Mac unable to fulfill their mission without government intervention, FHFA used its conservatorship authority in the newly amended Safety and Soundness Act. On September 6, 2008, the Director of FHFA appointed FHFA as the conservator for each Enterprise to preserve and conserve the assets of the Enterprises and to put the companies in a sound and solvent condition. The goals of conservatorship are to restore confidence in the Enterprises, enhance the Enterprises' abilities to fulfill their missions, and mitigate the systemic risk that contributed directly to the instability during the financial crisis.[16]

As conservator, FHFA directs the operations of each Enterprise. The Agency has empowered the Enterprises' boards of directors and senior management to manage most

[16] https://www.fhfa.gov/Conservatorship.

day-to-day operations of the Enterprises, so that the companies can continue to support the mortgage markets without interruption. The approach that FHFA uses to exercise control and manage the conservatorships of Fannie Mae and Freddie Mac is discussed in the next section.

While the Enterprises are in conservatorship, the Treasury Department provides Fannie Mae and Freddie Mac with financial support through PSPAs. This support is unprecedented, and was necessary for the Enterprises to be able to meet their outstanding obligations and to continue to provide liquidity to the mortgage market. The initial PSPAs in September 2008 included an initial issuance to the Treasury Department of preferred stock with a liquidation preference of $1 billion each in Fannie Mae and Freddie Mac and warrants for a 79.9 percent common equity stake in each Enterprise.

Quarterly draws were designed to allow each Enterprise to maintain positive net worth. The maximum permitted amount was set at $100 billion for each Enterprise. The dividend rate on senior preferred stock purchased by the Treasury Department was set at 10 percent. In addition, the PSPAs provided for a "periodic commitment fee" to compensate the Treasury Department for its continuing commitment to purchase further senior preferred stock, up to a maximum commitment amount, as necessary to maintain the solvency of the Enterprises. (The Treasury Department regularly waived that fee, and in the August 2012 third amendment to the PSPAs, the fee was indefinitely suspended for so long as the "net worth sweep" established by that amendment remained in effect.) The PSPAs also included a requirement for each Enterprise to reduce the size of the retained portfolio by at least 10 percent each year, but allowed a $250 billion portfolio per Enterprise to support core business functions. The first amendment to the agreement in

May 2009 doubled the maximum cumulative draw per Enterprise to $200 billion, and a second amendment in December 2009 replaced the maximum draw amount with a formulaic approach.

The third amendment to the agreement in August 2012 replaced the 10 percent dividend and the periodic commitment fee with a variable structure, under which the net income of each Enterprise in excess of a small capital buffer (the "Applicable Capital Reserve Amount") is swept to the Treasury Department. In many quarters, the payment equals quarterly net profits. With this amendment, all of the Enterprises' earnings are used to benefit taxpayers. The third amendment also provided for the uniform reduction of the Applicable Capital Reserve Amount from $3 billion to $0 at the end of 2017. In addition, the third amendment increased the rate of reduction in the size of the retained portfolios. Each Enterprise must reduce its portfolio by 15 percent per year, which is a faster reduction rate than the previous 10 percent annual reduction. This reduces the maximum retained portfolios to $250 billion by the end of 2018.

In December 2017, the PSPAs were revised to restore the Applicable Capital Reserve Amount to $3 billion. FHFA considers this capital reserve amount to be sufficient to cover normal fluctuations in income in the course of each Enterprise's business.[17]

E. Enterprises' Business Model and Changes in Conservatorship

FHFA uses four key approaches to manage the conservatorships of Fannie Mae and Freddie Mac. First, it establishes the overall strategic direction for the Enterprises in

[17] https://www.fhfa.gov/Media/PublicAffairs/Pages/Statement-from-FHFA-Director-Melvin-L-Watt-on-Capital-Reserve-for-Fannie-Mae-and-Freddie-Mac.aspx.

the Strategic Plan for the Conservatorships and an annual scorecard. Next, within the scope of the Strategic Plan and annual scorecard, FHFA authorizes the board of directors and senior management of each Enterprise to carry out the day-to-day operations of the companies. Third, for certain actions which FHFA has carved out as requiring advance approval by the Agency, it reviews and considers those requests. Finally, FHFA oversees and monitors the Enterprises' activities.

FHFA's conservatorship strategic plan has three goals: 1) to maintain foreclosure prevention activities and new credit availability in a safe and sound manner, 2) to reduce taxpayer risk through increasing the role of private capital, and 3) to build a new securitization infrastructure. The annual scorecards provide more specific direction for meeting these goals. FHFA reports to the public on its yearly activities through a number of reports, including an Annual Report to Congress, scorecard progress reports, credit risk transfer progress reports, and updates on the implementation of the common securitization platform and single security.

As discussed earlier, the Enterprises' business model before conservatorship of supporting single-family and multifamily housing traditionally consisted of both a guarantee business and a portfolio business. In the guarantee business, lenders may exchange loans for a guaranteed mortgage-backed security, which may then be sold by the lender into the secondary market to recoup funds to make more loans, or they may sell loans directly to an Enterprise through the cash window. The Enterprises purchase loans through the cash window from multiple smaller-volume lenders to aggregate and later securitize and guarantee. Loans purchased through the cash window are held in portfolio until they are securitized and become part of the guarantee business. The

Enterprises charge a guarantee fee to cover the costs of providing the guarantee. In the portfolio business, the Enterprises invest in assets such as whole loans or mortgage-backed securities, and funds those purchases with debt issuances.

Consistent with the terms of the PSPAs with the Treasury Department, the portfolio business has been reduced substantially in size during conservatorship, with the guarantee business assuming a much larger role. While the portfolio business involves both credit and market risk, in the guarantee business the Enterprises assume the credit risk and the market risk is borne by private investors in the guaranteed mortgage-backed securities. In conservatorship, consistent with direction provided by FHFA in its strategic plan and annual scorecard, the Enterprises have developed programs to transfer a significant portion of the credit risk in the single-family guarantee business to the private sector.

In addition to reducing the size of the retained portfolios, the Enterprises have also strengthened underwriting and eligibility standards, aligned certain business processes, and worked toward implementing a common securitization platform.

Guarantee Fees

The Enterprises charge fees to lenders in return for guaranteeing the credit risk on mortgage-backed securities. In response to the housing crisis and in conservatorship, the Enterprises have made a number of changes to these guarantee fees. As a result, the average single-family guarantee fee increased from 22 basis points in 2007 to 57 basis points in 2016.

In 2008, to better align fees with credit risk, the Enterprises increased ongoing guarantee fees and added two new upfront fees: a fee based on the combination of a

borrower's credit score and loan-to-value ratio, and a 25 basis point adverse market charge. In late 2008 through 2011, the Enterprises gradually raised fees and further refined their upfront fee schedules. In late 2011, as mandated by the Temporary Payroll Tax Cut Continuation Act of 2011,[18] FHFA directed the Enterprises to increase guarantee fees by 10 basis points on average to offset the cost to the Treasury Department of a temporary payroll tax cut enacted by Congress.

In 2012, FHFA directed the Enterprises to raise fees by an additional 10 basis points on average to better compensate taxpayers for the Enterprises' credit risk. Fees were raised in a manner that helped eliminate volume-based discounts and thereby provide a level playing field for lenders of all sizes.

In 2013, FHFA announced another round of fee increases but subsequently suspended the implementation of those changes in order to perform a comprehensive review of the Enterprises' guarantee fees. After completing that review in 2015, FHFA directed the Enterprises to implement certain adjustments. These adjustments included the elimination of the adverse market charge in all markets and targeted increases for specific loan groups. The set of fee changes was approximately revenue neutral with little to no impact for most borrowers.

In 2016, in response to findings in its ongoing quarterly guarantee fee reviews, FHFA established minimum guarantee fees by product type to help ensure the continued safety and soundness of the Enterprises.

[18] Pub. L. 112-78, Dec. 23, 2011, 125 Stat. 1280.

Retained Portfolio

Under the PSPAs with the Treasury Department and direction from FHFA, the unpaid balance of each Enterprise's mortgage portfolio is subject to a cap that decreases by 15 percent each year until the cap reaches $250 billion. The Enterprises have made significant progress on reducing their retained portfolios, and toward using the portfolios to support core business activities rather than as a source of investment income. The Enterprises have reduced their retained portfolios by over 60 percent since 2009, and both Enterprises are ahead of schedule in meeting the 2018 maximum portfolio limits.

Most of the portfolio reduction has resulted from prepayments and regular amortization of mortgages. The Enterprises have also sold less-liquid assets, such as private-label securities and non-performing and re-performing loans, in order to transfer risk to private investors. The Enterprises also securitized certain re-performing mortgages held on their books and sold those securities into the market. Fannie Mae's holdings of Fannie Mae-guaranteed securities fell from $229 billion at the end of 2008 to $49 billion in 2017, and holdings of other securities fell from $133 billion to $5 billion over the same period. Freddie Mac's retained portfolio experienced similar declines, as holdings of Freddie Mac-guaranteed securities fell from $425 billion in 2008 to $132 billion in 2017, and other mortgage securities fell from $269 billion to $14 billion over the same period.

The Enterprises' retained portfolios now primarily support the core business activities of aggregating loans from single-family and multifamily lenders to facilitate securitization, and holding delinquent loans in portfolio to facilitate loan modifications in order to keep borrowers in their homes and reduce Enterprise losses. The portfolios also

support certain affordable products that cannot be easily securitized. In addition, the Enterprises' retained portfolios may be used to support underserved markets under Duty-to-Serve Plans that the Enterprises have begun to implement in 2018.

Credit Risk Transfer

The Enterprises have significantly expanded their practice of transferring credit risk to the private sector in recent years. Credit risk transfer (CRT) has long been a part of each Enterprise's multifamily business. In 2016, the Enterprises transferred a portion of credit risk to private investors on over 90 percent of their combined multifamily acquisition volume. In 2013, the Enterprises began to develop programs to transfer a portion of the credit risk on their single-family new-acquisition businesses. The purpose is to reduce the risk to the Enterprises and taxpayers of future borrower defaults where it is economically sensible to do so.

FHFA assesses the Enterprises' CRT programs using certain core principles. The transactions must transfer a meaningful amount of credit risk to private investors to reduce taxpayer risk, and the cost of the credit risk transfers must be economically sensible in relation to the cost of the Enterprises self-insuring the risk. In addition, the transactions may not interfere with the Enterprises' core business, including the ability of borrowers to access credit. The CRT programs are intended to attract a broad investor base, be scalable, and incorporate a regular program of issuances. In transactions where credit risk may not be not fully collateralized, the program counterparties must be financially strong and able to fulfill their commitments even in adverse market conditions.

Loans targeted for single-family CRT include fixed-rate mortgages with loan-to-value ratios greater than 60 percent and original term greater than 20 years. These loans carry the majority of the Enterprises' credit risk exposure. Loans targeted for credit risk transfer have grown from 42 percent of total Enterprise acquisitions in 2013 to 62 percent of acquisitions in the first half of 2017. The Enterprises continue to assume the full credit risk on less risky loans with lower loan-to-value ratios and shorter terms, as well as on certain higher risk legacy loans where the economics do not favor CRT transactions. The Enterprises also transfer risk on loans outside of the targeted loan population.

The single-family CRT programs, implemented since 2013, supplement the more traditional credit enhancements required by the Enterprises' charters. The charters require loans with loan-to-value ratios above 80 percent to have loan-level credit enhancement, most often obtained through private mortgage insurance. From 2013 through the first half of 2017, the Enterprises transferred a portion of the credit risk through their single-family CRT programs on $1.8 trillion of mortgages with a combined risk in force of $61 billion, or 3.4 percent of the credit risk. During the same period, primary mortgage insurers also covered a portion of credit risk on $837 billion of unpaid principal balances (UPB) through traditional loan-level insurance.

Since 2013, the CRT programs have become a core part of the single-family business. In the second quarter of 2017, the Enterprises transferred risk on $213 billion of mortgages, with risk in force of $6 billion or nearly 3 percent of risk. Debt issuances accounted for 70 percent of the risk in force, insurance and reinsurance transactions accounted for 25 percent, and lender risk sharing accounted for the remaining 5 percent. Front-end reinsurance transactions increased from 2 percent of the risk in force in the first

quarter of 2017 to 4 percent in the second quarter. In the first half of 2017, loans targeted for CRT represented 62 percent of the Enterprises' single-family loan production.

Enterprise debt issuances have been the primary risk transfer vehicle to date. Fannie Mae uses a structure called Connecticut Avenue Securities (CAS), while Freddie Mac issues Structured Agency Credit Risk (STACR) securities. CAS and STACR have been designed to track the performance of a reference pool of loans previously securitized in Enterprise guaranteed MBS. These debt transactions are fully collateralized, since investors pay for the notes in full and absorb credit losses through a reduction in the principal due on the underlying notes. The Enterprises typically retain the first 50 basis points of expected losses in most transactions because purchasing protection for this portion may not offer economic benefits. While debt transactions have been the primary CRT method, the Enterprises have worked to broaden their investor base through other structures, and to compare executions across different structures and market environments.

Insurance and reinsurance transactions are considered part of the Enterprises' CRT programs and are separate from the Enterprises' charter requirements for loans with loan-to-value ratios above 80 percent. These transactions generally involve pool-level policies that cover a specified amount of credit risk for a large pool of loans. Fannie Mae uses a structure called Credit Insurance Risk Transfer (CIRT), while Freddie Mac uses the Agency Credit Insurance Structure (ACIS). These structures are partially collateralized, and the Enterprises distribute risk among a group of highly-rated insurers and reinsurers to reduce counterparty and correlation risk.

In senior/subordinate transactions, an Enterprise sells a group of mortgages to a trust that securitizes the cash flows into different bond tranches. Prior to 2017, super conforming loans that would otherwise have backed Freddie Mac mortgage-backed securities were used as collateral in Freddie Mac's single-family senior/subordinate transactions called Whole Loan Securities (WLS). The subordinate and mezzanine tranches, which are not guaranteed, absorb the expected and unexpected credit losses. The senior bonds, which were guaranteed by the Enterprise, have historically traded at a slight discount to comparable Freddie Mac mortgage-backed securities. In order to provide a more scalable and economic solution, in 2017 Freddie Mac introduced a revised structure to its WLS, called STACR Securitized Participation Interests (SPI). This new structure allows for the issuance of mortgage-backed securities rather than guaranteed senior certificates to improve the pricing execution in the credit risk transfer. The STACR SPI trust will continue to issue unguaranteed credit certificates as subordinate and mezzanine tranches. In contrast to synthetic CRT structures, the senior/subordinate structure is eligible for purchase by real estate investment trusts (REITs).

Another form of single-family risk structure is lender front-end CRT, where the credit risk is transferred prior to or simultaneous with the Enterprise loan acquisition. Lender front-end risk transfer can be structured through the issuance of securities with the lender holding the credit risk by retaining the securities, or by selling the securities to credit risk investors. Alternatively, in traditional lender recourse transactions, the lender may forgo securities issuance and simply retain the credit risk. The lender will often, but not always, fully collateralize its obligation. While the Enterprise charter requirement for

loan-level credit enhancement is typically through private mortgage insurance, the charters allow the Enterprises to accept lender recourse as an alternative, so lender retention of credit risk has been used to a lesser extent in the past. However, this lender recourse has not always been fully collateralized.

While the newest forms of single-family CRT started in 2013, risk sharing has been an integral part of the Enterprises' multifamily business for many years. Fannie Mae's primary multifamily risk-transfer program exists through its Delegated Underwriting and Servicing (DUS). In this program, lenders typically share up to one-third of the credit losses on a pro-rata basis with the Enterprises. In an effort to broaden its program offerings, Fannie Mae completed the first non-DUS CRT in 2016 when it transferred a portion of its credit risk to the reinsurance industry. Freddie Mac's multifamily risk-transfer program generally exists through its K-Deal program in which Freddie Mac purchases loans that are put into diversified pools, and placed into multiclass securities for sale to private investors. The subordinate and mezzanine bond tranches are not guaranteed by Freddie Mac. Instead, the subordinate or "B-piece" holders are in the first-loss position in the event of a mortgage default. If losses exceed the "B-piece" level, holders of the mezzanine bond tranche assume the additional losses. The subordinate and mezzanine tranches are sized such that virtually all credit risk is transferred to the investors in those securities. The senior bonds comprise the remainder of the K-Deal and are guaranteed by Freddie Mac.

Underwriting Standards and Qualified Mortgages

The Enterprises are required to emphasize sound underwriting practices in their purchase guidelines. Since entering conservatorship, the Enterprises have continued to

refine automated underwriting systems to better assess risk, reduce risk layering, improve the use of compensating factors, and enable access to credit in a safe and sound manner. The Enterprises launched the Uniform Mortgage Data Program to standardize data in the mortgage industry to help improve loan quality and mortgage risk management. The Enterprises also revamped the Representation and Warranty Framework to reduce lender uncertainty around requirements to repurchase loans from the Enterprises and to support access to credit.

In the Dodd-Frank Act, Congress adopted ability-to-repay requirements for nearly all closed-end residential mortgage loans. Congress also established a presumption of compliance with these requirements for a certain category of loans called Qualified Mortgages (QM). The Consumer Financial Protection Bureau (CFPB) adopted an ability-to-repay rule to implement these provisions.

A loan is generally considered a Qualified Mortgage if: 1) the points and fees do not exceed 3 percent of the loan amount, 2) the term does not exceed 30 years, 3) the loan is fully amortizing with no negative amortization, interest-only, or balloon features, and 4) the borrower's debt-to-income (DTI) ratio does not exceed 43 percent. CFPB also defined a special transitional class of QM loans that are not subject to the 43 percent DTI limit if they are eligible for sale to either Enterprise.

Before the CFPB rule became final, the Enterprises had already improved underwriting standards and eliminated purchases of the higher risk products such as negative amortization and interest-only loans. In 2013, after the CFPB rule became final, FHFA directed each Enterprise to acquire only loans that meet the points and fees, term and amortization requirements of the CFPB's rule for Qualified Mortgages.

Loss Mitigation

FHFA has also worked with the Enterprises to develop effective loss mitigation programs to minimize losses and enable borrowers to avoid foreclosure whenever possible. The Enterprises aligned their loss mitigation standards and developed updated loan modification and streamlined refinance products. The Enterprises are also pursuing efforts to stabilize distressed neighborhoods through the Neighborhood Stabilization Initiative. Better underwriting standards, improved loss mitigation, and an improving economy have resulted in the Enterprises' serious delinquency rates falling to their lowest level since the Enterprises entered into conservatorship in 2008.[19]

Common Securitization Platform and Single Security

During conservatorship, the Enterprises have worked to build a new single-family securitization infrastructure. This includes development of a common securitization platform (CSP) and a single Enterprise mortgage-backed security. Fannie Mae and Freddie Mac established Common Securitization Solutions, LLC (CSS) as a jointly-owned company to develop and operate the platform. The platform will replace some of the proprietary systems used by the Enterprises to securitize mortgages and perform the back office functions.

In 2015, FHFA announced a two-part process for the CSP and single security. Release 1, which was implemented in 2016, uses the CSP to issue Freddie Mac's existing single-class securities. Release 2, the implementation of which is planned for the second quarter of 2019, will enable the issuance of the single security called the Uniform

[19] Fannie Mae's single-family serious delinquency rate fell from 2.42 percent at the end of 2008 to 1.24 percent at the end of 2017. Freddie Mac's single-family serious delinquency rate fell from 1.83 percent to 1.08 percent over the same period.

Mortgage Backed Security (UMBS) through the CSP. The single security initiative will increase the liquidity of the TBA market for newly issued mortgage-backed securities and will eliminate the differences in pricing between Fannie Mae and Freddie Mac securities.

Governance and Supervision

When FHFA placed the Enterprises into conservatorship, it replaced most members of the boards of directors and many senior managers. Through conservatorship and regular supervisory oversight, the Agency required the Enterprises to improve risk management, update legacy systems, and improve data management. As part of its supervision function, FHFA issues advisory bulletins, which communicate FHFA's supervisory expectations to the Enterprises on specific supervisory matters and topics. In addition, through its supervision program, FHFA's on-site examiners conduct supervisory activities to ensure safe and sound operations of the Enterprises. These supervisory activities include the examination of the Enterprises to determine whether they comply with their own policies and procedures and regulatory and statutory requirements, and whether they comply with FHFA directives and meet the expectations set in FHFA's advisory bulletins.

F. Comparison of Enterprises and Large Depository Institutions

FHFA has reviewed and used the regulatory capital standards applicable to commercial banks as a point of comparison in developing the proposed capital requirements for the Enterprises. In conducting this evaluation, it was important for FHFA to consider both similarities and differences in the Enterprise and bank business models. This section reviews capital requirements for depository institutions and then discusses the differences in Enterprise and bank business models.

Bank Capital Requirements

Basel Accords

The Basel Accords set the international framework for bank capital requirements. The initial framework, Basel I, was replaced by Basel II, which was in place during the financial crisis. After the financial crisis, regulators adopted standards consistent with Basel III. Each country has a different way of applying the Basel standards to meet their national legal framework. The Federal Reserve Board (Board), Office of the Comptroller of the Currency, and Federal Deposit Insurance Corporation have federal regulatory and supervisory jurisdiction over banks in the United States.

The Basel Accords have evolved over time. The 1988 Basel Accord, also known as Basel I, was implemented by the Group of Ten (G-10) countries in 1992. In Basel I, credit risk was addressed by using simple ratios, there was little attention given to market risk, and no provision was made for operational risk. The Basel II update was initially published in 2004 to make the capital calculation more risk sensitive. Basel II had three pillars: risk-based capital requirements, supervisory review, and market discipline. For the risk-based capital requirements under Basel II, credit risk, market risk, and operational risk were all quantified based on data, and credit risk could be quantified using either the standardized approach or internal ratings based (IRB) approach. Under the supervisory review pillar, Basel II provided a framework for supervisory review of systemic, concentration, and liquidity risk among others. Under the market discipline pillar, Basel II included a set of disclosure requirements to allow market participants to better understand an institution's capital adequacy.

When the U.S. banking regulators issued the final Basel II rules in late 2007 and in 2008, the regulators required each bank to follow the set of rules that was the most conservative for the bank. The largest banks were required to use the internal ratings based approach, while the smaller banks were given a choice between using the standardized approach or the internal ratings based approach.

Basel III was developed in response to the financial crisis and was agreed to by Basel members in 2010-11. Basel III strengthened the requirements in Basel II and introduced bank liquidity requirements to reduce the risk of a run on a bank. Basel III also added capital buffers as extra capital cushions on top of regulatory capital minimums, to absorb unexpected shocks. Basel III is being phased in through 2019.

U.S. risk-based and leverage capital requirements for banks

Under current regulations implemented by U.S. regulators to align with Basel III, U.S. banks must meet certain leverage and risk-based capital requirements to be considered adequately capitalized. These capital adequacy standards protect deposit holders and the stability of the financial system. Two types of capital are measured: Tier 1 and Tier 2. Tier 1 capital comprises common stock, retained earnings, non-cumulative perpetual preferred stock, and accumulated other comprehensive income (AOCI). Common equity Tier 1 capital excludes cumulative preferred stock. Tier 2 capital is supplementary capital consisting of items such as, but not limited to, cumulative preferred stock, subordinated debt, and certain reserves that provide less protection.

Banks must also meet certain risk-based capital ratios and leverage ratios under existing regulations. As part of the risk-based capital standard for credit risk, the capital ratio is the ratio of capital to risk-weighted assets (RWA). Basel allows banks to choose

between two methods for calculating their capital requirement for credit risk, and U.S. regulators have implemented both methods under existing regulations: the standardized approach and the internal ratings based approach. Under the standardized approach, regulators require use of prescribed risk weights for every type of exposure to determine the credit risk RWA amount. Mortgages have a risk weight of 50 percent under the standardized approach, regardless of the loan-to-value ratio, credit score, and other risk attributes. The largest banks in the U.S. are required to use the internal ratings based (IRB) approach to determine the risk weights of asset classes. In the IRB approach, the capital charge for a mortgage varies based on the risk attributes of the specific mortgage loan using the credit model and loss experience of the bank. However, when calculating minimum capital requirements, under the Dodd-Frank Act's Collins Amendment large U.S. banks must compute their risk-weighted assets using both a standardized approach and the advanced approach, and must use the higher of these two numbers when computing pre-stress risk-based capital ratios. Because the standardized approach often results in a higher ratio, the Collins Amendment effectively makes the standardized approach the binding requirement for large U.S. banks, and serves to place all banks, regardless of size, on equal footing in terms of minimum risk-based capital requirements. In contrast to the risk-based capital ratios, the leverage ratios compare capital to assets without any weighting for risk.

Prompt corrective action framework

The Federal Deposit Insurance Act requires insured depository institutions and federal banking regulators to take prompt corrective action to resolve capital deficiencies

as defined under the prompt corrective action framework.[20] To be considered well capitalized, banks must have a total risk-based capital ratio of 10 percent, Tier 1 risk-based capital ratio of 8 percent, common equity Tier 1 risk-based capital ratio of 6.5 percent, and Tier 1 leverage ratio of 5 percent. To be considered adequately capitalized, banks must have a total risk-based capital ratio of 8 percent, Tier 1 risk-based capital ratio of 6 percent, common equity Tier 1 risk-based capital ratio of 4.5 percent, and Tier 1 leverage ratio of 4 percent. Lower levels of capital result in a bank being classified as undercapitalized, significantly undercapitalized, or critically undercapitalized. At the extreme lower end, a bank would be placed into receivership.

The banking regulators also mandate three capital buffers relative to the risk-based capital ratios: the capital conservation buffer, the countercyclical capital buffer, and the global systemically important bank (G-SIB) surcharge. Banks must meet applicable buffers to avoid restrictions on capital distributions.

The capital conservation buffer requires banks to maintain each of the three risk-based capital ratios (Common Equity Tier 1, Tier 1, and Total Capital) at levels in excess of 2.5 percent above the minimum required levels. The countercyclical capital buffer requires banks to maintain an additional amount of excess capital during economic periods of non-stress. The countercyclical buffer has a potential range of 0 percent to 2.5 percent, and is currently set to zero. As it is structured, the countercyclical capital buffer functions as an extension of the capital conservation buffer. The G-SIB surcharge is applied in addition to the capital conservation buffer, but only on the largest banks identified as globally systemically important. The G-SIB surcharge is based on defined

[20] 12 CFR 324.403

criteria that determine the size of the bank's systemic footprint, which represents the risk that the bank poses to the global financial system in excess of risk posed by financial institutions not subject to the surcharge. The different buffers are being phased-in through 2019.

In addition to the risk-based capital requirement, federal banking regulators have also established a 4 percent Tier 1 leverage ratio that measures the Tier 1 capital available relative to average consolidated assets. This measure does not capitalize off-balance sheet exposures.

Bank regulatory capital rules also require calculation of a supplementary leverage ratio (Tier 1 capital/total leverage exposure) for banks that are subject to that requirement starting in January 2018.[21] The supplementary leverage ratio is 3 percent of on-balance sheet assets and off-balance sheet exposures and applies to those banking institutions that must adhere to the advanced approach. In addition, those institutions with more than $700 billion in total consolidated assets are also subject to the enhanced supplementary leverage buffer of an additional 2 percent, totaling 5 percent when combined with the supplementary leverage ratio of 3 percent.[22] Banks must meet each of these minimum regulatory capital ratios, as required, after making all capital actions included in the capital plan, under both the baseline and stress scenarios over the nine-quarter planning horizon.[23]

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[21] The supplemental leverage ratio includes off-balance sheet exposures for large banks.

[22] The Federal Reserve Board and the Office of the Comptroller of the Currency (OCC) recently proposed a rule that included changes to the enhanced supplementary leverage ratio standards. *See* *https://www.gpo.gov/fdsys/pkg/FR-2018-04-19/pdf/2018-08066.pdf*.

[23] *See* Table 1 at *https://www.federalreserve.gov/publications/comprehensive-capital-analysis-and-review-summary-instructions.htm* Some banks, depending on their size and complexity, must meet additional buffers—capital conservation buffer, countercyclical buffer and globally systemically important bank surcharge—but these are not included in the stress test assessment.

Comprehensive Capital Analysis and Review (CCAR) and capital plan requirements

In addition to the requirements that are tied to a prompt corrective action framework, the Federal Reserve Board's annual CCAR also assesses the capital adequacy of large bank holding companies with at least $50 billion in assets. The CCAR review is based on a going-concern structure, where the bank holding company must hold enough capital to withstand a severely adverse scenario, continue to lend, and meet creditor obligations over a nine-quarter period of time. The CCAR stress tests are tied to the Board's capital plan requiring that these bank holding companies submit a capital plan to the Federal Reserve each year. The bank holding companies are required to report the results of stress tests conducted under supervisory scenarios provided by the Board and under a baseline scenario and a stress scenario designed by the bank holding company.

The Board's qualitative assessment of each bank holding company's capital plan considers the institution's capital planning process, including the stress testing methods, internal controls, and governance. The quantitative assessment of the plan is based on the supervisory and institution-run stress tests that are conducted in part under the Dodd-Frank Act stress test rules.[24] The Board may object to a capital plan based on the qualitative and quantitative assessments, and, as a result, may restrict capital distributions.[25] However, the stress test results do not trigger prompt corrective actions as described above under the Federal Deposit Insurance Act.

[24] The DFAST and CCAR capital analyses use the same projections of income, assets and RWA, but use different capital action assumptions to project post-stress capital levels.

[25] The Federal Reserve Board recently published a notice of proposed rulemaking that would create a single, integrated capital requirement by combining the quantitative assessment of the CCAR with the buffer requirements in the Board's regulatory capital rule, and eliminate the CCAR quantitative objection in the process. *See* 83 FR 18160 (April 25, 2018).

Under CCAR, during anticipated stress periods defined by the stress test scenarios required by the Board, banks are expected to maintain capital levels above the minimum risk-based and leverage capital ratios for adequately capitalized institutions under the prompt corrective action framework described earlier.[26]

Comparison of Enterprise and Bank Business Models

While the Enterprises are comparable in size to some of the largest depository institutions, the relative risks of banks compared to the Enterprises differ in important ways. These differences include, among others, the sources and associated risk level of income and assets, differences in funding risk, and the relative exposure to mortgage assets. Each of these differences is discussed below.

First, while banks have a more diversified source of income and assets compared to the Enterprises, the overall risk of Enterprise mortgage assets is lower than that of banks. Banks are depository institutions that attract customer deposits on which banks pay interest expense, and lend those funds through loans in diversified asset classes to other customers from whom the bank earns interest income, thereby earning net interest income. Bank lending covers a number of different asset classes, not just real estate lending, such as credit cards, car loans, and business loans. Since the repeal of the Glass-Steagall Act in 1999, banks have also been more active in earning non-interest income through brokerage fees and other business activities. However, traditional depository institutions still rely primarily on net-interest income, as compared to investment banks.

[26] The stress test uses RWA based on the standardized approach, but these large banks may use the model-based internal ratings-based approach for capital adequacy under the prompt corrective action framework.

The Enterprises are monoline businesses focused on mortgage assets. For banks, mortgage assets carry a 50 percent risk weight in the Basel standardized framework. Therefore, the Enterprises' aggregate risk weight is lower than the average risk weight of banks with an abundance of assets with risk weights higher than 50 percent. To derive the risk-weighted asset density of bank assets, FHFA looked at the 31 largest bank holding companies subject to CCAR, to calculate an average risk-weighted asset density using end-of-quarter data from the first quarter of 2011 through the fourth quarter of 2014. The analysis estimated an overall risk-weighted asset density of 72 percent for the banks compared to 50 percent for residential mortgages.

Second, banks rely on more volatile funding sources compared to the Enterprises, which exposes banks to a greater degree of funding risk during times of market and economic stress. Banks use short-term customer deposits and debt as sources of funding for their business activity, both of which can leave a bank in need of new funding sources during times of economic uncertainty, such as during the recent financial crisis. In such situations, a bank could find that new sources of debt become considerably more expensive, if such sources are available at all. This type of funding risk is commonly referred to as rollover risk. By comparison, the Enterprises' core credit guarantee business of purchasing and securitizing mortgage loans provides a more stable source of funding that cannot be withdrawn during periods of market and economic stress, and is therefore not subject to rollover risk. Investors purchasing Enterprise mortgage-backed securities provide the companies with match-funding for these mortgage assets. The funding risk associated with the Enterprises' retained portfolios is more comparable to the funding risks of banks described above.

Third, even when comparing risk specifically associated with mortgage lending the Enterprises hold less risk compared to the mortgage investments of banks. Banks hold a larger portion of mortgages – both single-family and multifamily loans – as whole loans on their balance sheets. This exposes banks to interest rate, market, and credit risks associated with those loans. On the other hand, through their core guarantee business of purchasing mortgage loans and issuing mortgage-backed securities, the Enterprises transfer the interest rate and market risk of these loans to private investors. In addition, as mentioned above, the Enterprises also face substantially less funding risk compared to banks because of the match funding provided through mortgage-backed securities investors.

While the Enterprises remain responsible following securitizations for guaranteeing the credit risk of securitized loans, they have also developed ways to transfer significant parts of their credit risk to private market participants. During conservatorship, the Enterprises have developed credit risk transfer programs to transfer a portion of the credit risk for single-family mortgage purchases to private investors. In addition, the Enterprises' unique business models transfer credit risk on multifamily loans to private investors. Thus, the Enterprises have transferred a significant portion of the credit risk associated with their whole mortgage loans, whereas comparable whole mortgage loans are typically held by banks on their balance sheets.

The risk associated with the Enterprises' retained portfolios is similar in nature to risks held by banks. However, the Enterprises' retained portfolios have declined by more than a combined 60 percent while in conservatorship and are required by the PSPAs not to exceed $250 billion. While the Enterprises still have legacy assets that were purchased

before conservatorship as part of their retained portfolios, their ongoing use of retained portfolios during conservatorship has focused on supporting their core credit guarantee business. The Enterprises use their cash window to purchase single-family and multifamily loans directly from lenders, often smaller lenders, and aggregate these loans for subsequent securitization. The cash window enables smaller lenders to access the secondary market at competitive rates. The Enterprises also use their retained portfolios to repurchase non-performing loans as part of loss mitigation efforts to reduce losses for the Enterprises and taxpayers, and to help homeowners stay in their homes whenever possible.

FHFA is also not including separate buffers in this proposed rule beyond the proposed risk-invariant going-concern buffer for several reasons. First, FHFA believes that the robust features it selected for the proposed risk-based capital requirements make including a separate buffer unnecessary. These features include (1) covering losses for different loan categories for a severe stress event comparable to the recent financial crisis,[27] with somewhat more conservative house price recoveries than were observed following the recent financial crisis, (2) setting capital requirements without including future revenue, consistent with the Basel methodology, (3) requiring the full life-of-loan capital be put in place for each loan acquisition, and (4) the proposed risk-based capital requirements would include components for operational risk, market risk, and a risk-invariant going-concern buffer. Second, FHFA has the authority to increase capital requirements when prudent – either for risk-based capital or minimum leverage capital

[27] The 25 percent home price decline assumption in the severe stress event is also consistent with assumptions used in the DFAST severely adverse scenario over the past several years, although the 2017 DFAST cycle assumes a 30 percent home price decline in its severely adverse scenario.

requirements – by order or regulation. Third, while bank capital buffers are used to decide whether to restrict distributions of income, rather than changing the level of capital that is necessary to declare a bank undercapitalized and activate the prompt-corrective-action framework if the level is not met, the primary intent of the FHFA capital rule would be to establish the level of capital that should be considered "adequate" for the prompt-corrective-action framework of the Safety and Soundness Act.

G. Dodd-Frank Act Stress Test Process

Section 165 of the Dodd-Frank Act required the annual stress testing of certain financial companies with consolidated assets over $10 billion that are supervised by a federal regulator. Consistent with the Act, FHFA conducts stress tests of the Enterprises to determine whether each firm has the capital necessary to absorb losses during a period of adverse economic conditions. While in conservatorship, the Enterprises receive financial support through the PSPAs with the Treasury Department. Although the PSPAs restrict the ability of the Enterprises to hold equity capital beyond their approved capital buffers, FHFA expects the Enterprises to have procedures in place to support sound business decisions and the Enterprises have continued to consider capital levels and return on capital as integral parts of their business decision-making processes.

FHFA's stress testing rule establishes the basic requirements for the Enterprises on how to conduct the Dodd-Frank Act Stress Test (DFAST) each year. The Dodd-Frank Act requires financial regulators to use generally consistent and comparable stress scenarios. FHFA has generally aligned the stress scenarios for the Enterprises with the Federal Reserve Board's supervisory scenarios for annual stress testing required under the DFAST rule and CCAR. Each year, FHFA provides the Enterprises with specific

instructions and guidance for conducting the stress tests, as well as for reporting and publishing results.

The annual stress testing process includes three distinct scenarios – baseline, adverse, and severely adverse – with each scenario covering a nine-quarter period. The scenarios include macroeconomic variables, interest-rate variables, and indices (*e.g.*, unemployment rates, mortgage rates, house price paths, and gross domestic product). The Enterprises use these variables and indices as model inputs to stress the retained portfolios and guarantee business.

Since the Enterprises began conducting the annual DFAST process in 2014, the severely adverse scenario has generally represented economic conditions similar to those that occurred during the 2008 financial crisis. Although the specific scenario variables differ from year to year, the conditions represented by the macroeconomic, interest rate, and asset price shocks in the severely adverse scenario are consistent with a major market disruption similar to the disruption experienced in the 2008 crisis.

The severely adverse scenario also includes a global market shock component which is tailored to include particular risks faced by the Enterprises. This shock is treated as an add-on to the macroeconomic scenario and is taken as an instantaneous loss and reduction of capital in the first quarter of the nine-quarter planning horizon. It is assumed that none of these losses are recovered over the nine quarters. The Enterprises apply the shock to portfolio assets that are subject to fair value accounting (*i.e.*, assets classified as held-for-trading, available-for-sale, and held-for-sale). In addition, the global market shock includes a default of each Enterprise's largest counterparty. The shock assumes that each Enterprise incurs losses due to the sudden and unexpected default of the

counterparty to which it has the greatest financial exposure. Counterparties within the scope of the largest counterparty default component include security dealers for derivatives, private mortgage insurers, and multifamily credit enhancement providers.

The Federal Reserve Board releases DFAST supervisory scenarios in January or February of each year. FHFA provides the Enterprises with summary instructions and guidance within 30 days following the issuance of the Federal Reserve Board's final element of its supervisory scenarios. The instructions include submission templates for use in compiling and reporting the DFAST results for the three stress scenarios. The Enterprises conduct the stress tests and submit their results to FHFA on or before May 20 each year. For capital planning purposes, the Enterprises focus on the severely adverse scenario. FHFA requires the Enterprises to publicly disclose the DFAST stress test results under the severely adverse scenario between August 1 and August 15 each year.

For DFAST reporting purposes, FHFA requires the Enterprises to report two sets of financial results for the severely adverse scenario: one with and one without the establishment of a valuation allowance on deferred tax assets. In general, deferred tax assets are considered a capital component because these assets have loss absorbing capability by offsetting losses through the reduction of taxes. A valuation allowance on deferred tax assets is typically established to reduce deferred tax assets when it is more likely than not that an institution would not generate sufficient taxable income in the foreseeable future to realize all or a portion of its deferred tax assets. A valuation allowance on deferred tax assets is a non-cash charge resulting in a reduction in income and the retained earnings component of capital.

In 2008, during the financial crisis, Fannie Mae and Freddie Mac established partial valuation allowances on deferred tax assets of $30.8 billion and $22.4 billion, respectively. The reduction in capital from partial valuation allowances in 2008 contributed to the Enterprises' draws from the Treasury Department. Both Enterprises released the valuation allowances on deferred tax assets several years later, which resulted in a benefit to income at both Enterprises. For full transparency of the potential impact of deferred tax assets on the Enterprises' capital positions in a stress scenario, FHFA requires the Enterprises to disclose the severely adverse results both with and without the establishment of a valuation allowance on deferred tax assets. In the 2017 DFAST severely adverse scenario, for results that do not include establishing a valuation allowance on deferred tax assets, Fannie Mae's cumulative stress losses were $15 billion and Freddie Mac's cumulative stress losses were $20 billion. For results that include establishing a valuation allowance on deferred tax assets, Fannie Mae's cumulative stress losses were $58 billion and Freddie Mac's cumulative stress losses were $42 billion.

H. Important Considerations for the Proposed Rule

In summary, in developing the proposed rule, FHFA considered all information in this proposal and developed the proposed rule with the following factors in mind:

1. The Enterprises should operate under a robust capital framework that is similar to capital frameworks applicable to banks and other financial institutions, but appropriately differentiates from other capital requirements based on the actual risks associated with the Enterprises' businesses;
2. In proposing capital requirements, FHFA should use the substantial expertise and experience gained during the protracted conservatorships of the

Enterprises to ensure that the capital requirements secure the safety and soundness of the Enterprises while also supporting their statutory missions to foster and increase liquidity of mortgage investments and promote access to mortgage credit throughout the Nation;

3. FHFA considers it prudent to have risk-based capital requirements that include components of credit risk, operational risk, market risk, and a risk-invariant going-concern buffer; that require full life-of-loan capital for each loan acquisition; that are calculated to cover losses in a severe stress event comparable to the recent financial crisis, but with house price recoveries that are somewhat more conservative than experienced following that crisis; and that do not count future Enterprise revenue toward capital;
4. FHFA's ongoing authority under the Safety and Soundness Act to increase by order or regulation capital requirements – either risk-based or minimum leverage – reduces the need to put in place at this time specific limited-purpose or countercyclical buffers; and
5. It may be necessary in the future for FHFA to revise this rule or to develop a separate capital planning rule to more fully address stress testing of the Enterprises, the timing and substance of which will depend on the status of the Enterprises after housing finance reform.

II. The Proposed Rule

A. Components of the Proposed Rule

Risk-Based Capital Requirements

The Enterprises' assets and operations are exposed to different types of risk, and the proposed risk-based capital requirements would provide a granular and comprehensive approach for assigning capital requirements to individual asset and guarantee categories. The proposed risk-based capital requirements cover credit risk, including counterparty risk, as well as market risk and operational risk capital requirements for each asset and guarantee category. The proposed risk-based capital requirements also include a going-concern buffer, which would require the Enterprises to hold additional capital beyond what is required to cover economic losses during a severe financial stress event in order to maintain market confidence.

The credit risk capital requirements in the proposed rule are based on unexpected losses (stress losses minus expected losses) over the lifetime of mortgage assets. The proposed requirements were developed using historical loss data, including loss experience from the recent financial crisis. In addition, the proposed rule requires the Enterprises to hold this capital at the time of purchasing or guaranteeing an asset, and it does not, in general, count any future revenue toward the credit risk capital requirements.

For single-family and multifamily whole loans and guarantees, the proposed credit risk capital requirements use look-up tables consisting of base grids and risk multipliers to adjust capital requirements for the risk characteristics of each type of mortgage asset. Under this approach, an Enterprise's required capital will change with the composition of its book of business.

The proposed rule also includes a framework through which the Enterprises' credit risk capital requirements would be reduced to reflect the benefit of credit risk transfer transactions that protect the Enterprises and taxpayers from bearing potential credit losses. FHFA's proposed approach to calculating the capital relief provided by credit risk transfer transactions seeks to capture the credit risk protection provided while also accounting for counterparty risk for those transactions that are not fully funded up front.

The market risk component of the proposed risk-based capital framework establishes specific requirements for the market risk associated with certain Enterprise assets. The proposed approach focuses on capturing the spread risk associated with holding different assets in the retained portfolio: single-family whole loans, multifamily whole loans, private label securities (PLS), commercial mortgage-backed securities (CMBS) and other assets with market risk exposure.[28] These mortgages include legacy assets acquired by the Enterprises prior to conservatorship and assets purchased as part of the Enterprises' ongoing aggregation function, including aggregating single-family loans through the cash window before securitizing the loans into MBS, and Freddie Mac's aggregation of multifamily loans before placing the loans in K-deals or other securitizations.

The operational risk component of the proposed risk-based capital framework establishes an operational risk capital requirement of 8 basis points for all assets and guarantees to reflect the inherent risk in ongoing business operations.

[28] The Enterprises are no longer acquiring PLS and CMBS, and their holdings of these assets are currently in run-off mode.

The going-concern buffer component of the proposed risk-based capital framework establishes a 75 basis point requirement for most assets and guarantees, regardless of credit, market, or operational risk capital requirements. This buffer would ensure that the Enterprises maintain at least 75 basis points of capital on any mortgage guarantee, whole loan, or mortgage-related security held by the Enterprises. Based on the current size and composition of the Enterprises' books of business, FHFA estimates that the going-concern buffer would provide the Enterprises with sufficient capital to continue operating without external capital support for one to two years after a stress event.

FHFA sought to reduce model risk by developing the proposed risk-based requirements using a combination of the results from multiple models.[29] The proposed capital requirements are based on the model results from both Enterprises, and in some cases on model results from both Enterprises and from FHFA. In all cases the models were estimated to the extent possible using the Enterprises' historical loss data, including experiences from the recent housing crisis. While the proposed risk-based capital requirements reflect the Agency's view of the relative risk of Enterprise assets, which is subject to model risk, the two proposed alternative minimum leverage capital requirements are intended to provide a backstop to offset and balance this risk.

Minimum Leverage Capital Requirement

The proposed rule includes two alternative minimum leverage capital requirement proposals for consideration. Under the first approach, the 2.5 percent alternative, the

[29] FHFA acknowledges that multiple models could increase the burden of ongoing model risk management. However, FHFA sought to increase the reliability of the estimations used in the proposed grids and multiplier framework by combining the results of multiple models, and hence decreasing overall model risk.

Enterprises would be required to hold capital equal to 2.5 percent of total assets (as determined in accordance with GAAP) and off-balance sheet guarantees related to securitization activities, regardless of the risk characteristics of the assets and guarantees or how they are held on the Enterprises' balance sheets. Under the second approach, the bifurcated alternative, the Enterprises would be required to hold capital equal to 1.5 percent of trust assets and 4 percent of non-trust assets, where trust assets are defined as Fannie Mae mortgage-backed securities or Freddie Mac participation certificates held by third parties and off-balance sheet guarantees related to securitization activities, and non-trust assets are defined as total assets as determined in accordance with GAAP plus off-balance sheet guarantees related to securitization activities minus trust assets. The Enterprises' retained portfolios would be included in non-trust assets. Both the 2.5 percent alternative and the bifurcated alternative are discussed in greater detail in the Minimum Leverage Capital Requirements section.

In considering both the need for and the structure of an updated minimum leverage capital requirement, FHFA has taken into consideration several factors, including 1) how to best set the minimum leverage requirement as a backstop to the risk-based capital requirements; and 2) how to appropriately capture the funding risks of the Enterprises. The Safety and Soundness Act requires that FHFA establish, like other financial regulators, a minimum leverage requirement that can serve as a backstop in the event the risk-based capital standard becomes too low. As discussed earlier, risk-based capital requirements depend on models and, therefore are subject to the risk that the applicable model will underestimate or fail to address a developing risk. Another factor relevant in considering the leverage requirement's role as a backstop is the pro-cyclicality

of a risk-based capital framework. Because the proposed risk-based requirements use mark-to-market LTVs for loans held or guaranteed by the Enterprises in determining capital requirements, as home prices appreciate the Enterprises would be allowed to release capital as LTVs fall. Should home prices continue to rise and unemployment continue to fall, as each have done over the last several years, risk-based capital requirements such as the requirements in this proposed rule, would be expected to fall. In this context, a minimum leverage capital requirement would reduce the amount of capital released as risk-based capital levels fell below an applicable leverage requirement. In addition, and as discussed further below, FHFA has authority to adjust components of the risk-based capital requirements as a means of avoiding the pro-cyclical release of capital.

In the banking regulatory context, leverage requirements serve to help mitigate the risk that short-term funding, on which many banks rely, will become unavailable during a stress event. In proposing minimum leverage requirements, FHFA has considered the unique funding risks facing the Enterprises. As discussed in more detail below, in both the single-family and multifamily guarantee business lines the Enterprises are provided a stable source of funding that is match-funded with the mortgage assets they purchase. While these mortgage assets are reflected on the balance sheets of the Enterprises and represent the vast majority of their assets, the funding for these assets has already been provided and cannot be withdrawn during times of market stress.

FHFA is seeking comment on all aspects of both the 2.5 percent alternative and the bifurcated alternative proposed minimum leverage capital requirements, including how the different approaches relate to and complement the proposed risk-based capital measure.

B. Impact of the Proposed Rule

This section provides information about the impact of the proposed rule both at the end of 2007 (December 31, 2007) and at the end of the third quarter of 2017 (September 30, 2017). FHFA is providing this information to inform commenters about the impact the proposed rule would have on the Enterprises' capital requirements both leading up to the crisis and under the Enterprises' current operations in conservatorship. The summary information through the third quarter of 2017 is intended solely to provide context for commenters about what the impact of the proposed rule would be on the Enterprises if the Enterprises were able to build capital, and is specifically not intended by FHFA as suggesting steps toward recapitalizing the Enterprises while the Enterprises are in conservatorship. The summary information also provides context about the impact of the proposed rule on Enterprise business decisions being made while the Enterprises operate in conservatorship. While they are in conservatorship, FHFA expects the Enterprises to include capital assumptions in pricing and business decisions even though the Enterprises are unable to build capital and FHFA has suspended their regulatory capital classifications.

Impact of the Proposed Rule at the End of 2007

In 2008, the entire net worth of both Enterprises was depleted by losses. The Treasury Department invested in senior preferred stock of both Enterprises in order to offset losses. To offset losses and eliminate negative capital positions, Fannie Mae drew $116 billion from the Treasury Department between 2008 and the fourth quarter of 2011, while Freddie Mac drew $71 billion between 2008 and the first quarter of 2012.

Including the loss of net worth at the start of 2008, Fannie Mae lost a total of $161 billion and Freddie Mac lost a total of $109 billion in the housing and financial crisis.[30]

FHFA assessed whether the capital requirements in the proposed rule would have required the Enterprises to hold sufficient capital at the end of 2007, when combined with the Enterprises' revenues, to absorb losses sustained between 2008 and the dates at which the Enterprises no longer required draws from the Treasury Department to eliminate negative net worth – the fourth quarter of 2011 for Fannie Mae and the first quarter of 2012 for Freddie Mac.

FHFA compared each Enterprise's estimated minimum leverage capital requirement under both alternatives and the risk-based capital requirement based on the proposed rule for the entire portfolio of business at the end of 2007 to the Enterprises' peak cumulative capital losses as described above. The peak cumulative capital losses include losses due to establishing valuation allowances on deferred tax assets (DTAs) during the crisis. To calculate the minimum leverage capital requirement at the end of 2007, FHFA made a simplifying assumption because accounting rules have changed since 2007. Credit-guaranteed loans are now reported as assets, while in 2007 most credit guarantees were not on the balance sheet as they were netted with guarantee

[30] Between the second quarter of 2012 and 2017 neither Enterprise had to draw additional funds from the Department, and the PSPA's capital reserve had been set to decline to zero in 2018. However, in December 2017 FHFA entered into a letter agreement with the Treasury Department on behalf of the Enterprises to reinstate a $3.0 billion capital reserve amount under the PSPA for each Enterprise, beginning in the fourth quarter of 2017, against income fluctuations and future losses. Since the agreement was reached, Congress passed and the President signed the Tax Cut and Jobs Act of 2017 on December 22, 2017 that lowered the corporate tax rate from 35 percent to 21 percent. As a result, the value of Fannie Mae's net deferred tax asset declined by $9.9 billion in the fourth quarter of 2017, necessitating a $3.7 billion draw from the Treasury Department, while the value of Freddie Mac's net deferred tax asset declined by $5.4 billion, necessitating a draw from the Treasury Department of $312 million.

obligations. For purposes of this analysis FHFA treated the credit guarantees in 2007 as assets.[31]

FHFA also compared each Enterprise's single-family credit risk capital requirement as of December 31, 2007 to the Enterprise's single-family lifetime credit losses, where lifetime losses are defined in this section as actual single-family credit losses through June 30, 2017 plus projected remaining lifetime single-family credit losses on the December 31, 2007 portfolio.

A significant portion of the Enterprises' credit losses since 2007 resulted from higher risk loans which the Enterprises no longer purchase or guarantee due to the Ability to Repay and Qualified Mortgage rule issued by the CFPB in 2013 and due to the Enterprises' strengthened underwriting standards. Because the Enterprises no longer purchase these loans, FHFA also assessed whether the credit risk capital requirement under the proposed rule would have been sufficient to cover projected lifetime losses on loans that meet the Enterprises' current acquisition criteria.

In sum, the amount of capital required by the Enterprises under the proposed risk-based capital requirements would have exceeded the cumulative losses, net of revenues earned, at both Enterprises between 2008 and the respective date at which each Enterprise no longer required draws from the Treasury Department. In this analysis, cumulative losses include credit losses on all loans purchased, including those no longer eligible for purchase, and losses due to establishing a valuation allowance on DTAs. In evaluating how the proposed risk-based capital requirements would have applied to the Enterprises at the end of 2007, it is important to note that the proposed rule would establish a risk-

[31] The Enterprises continue to report their capital levels based on prior accounting rules. *See* Regulatory Interpretation 2010-RI-1, Jan. 12, 2010.

based capital requirement for DTAs that would offset the DTAs included in core capital in a manner generally consistent to the U.S. financial regulators' treatment of DTAs.[32] In addition, the credit risk capital component of the proposed risk-based capital requirements exceeded projected credit losses for both Enterprises for all loans acquired or guaranteed, excluding those that are not currently eligible for purchase.

Fannie Mae

Fannie Mae's statutory minimum leverage capital requirement was $42 billion as of December 31, 2007. For comparison, and as illustrated in the table below, Fannie Mae's estimated minimum leverage capital requirement as of December 31, 2007 based on the proposed rule would have been $76 billion under the 2.5 percent alternative or $68 billion under the bifurcated alternative. Fannie Mae's estimated minimum leverage capital requirement under either proposed alternative as of December 31, 2007 would have been insufficient to cover Fannie Mae's peak cumulative capital losses of $167 billion. However, Fannie Mae's estimated risk-based capital requirement of $171 billion based on the proposed rule would have exceeded Fannie Mae's peak cumulative capital losses of $167 billion. We include in Fannie Mae's peak cumulative capital losses the valuation allowance on deferred tax assets of $64 billion and revenues of $78 billion earned between 2008 and the fourth quarter of 2011.

[32] *See* section II.C.8 for a detailed discussion of DTAs.

Table 1: Fannie Mae's Capital Requirement Comparison to Peak Cumulative Capital Losses

	$ in billions	% of Total Assets and Off-balance Sheet Guarantees as of Dec 31, 2007*
Net Worth as of Dec 31, 2007	$44	1.4%
Equity Issuance in 2008	7	0.2%
Cumulative Draws**	116	3.8%
Peak Cumulative Losses since Dec 31, 2007	$167	5.5%
Statutory Minimum Capital Requirement as of Dec 31, 2007	$42	1.4%
…Relative to Peak Capital Losses	($126)	(4.1%)
2.5% Alternative as of Dec 31, 2007	$76	2.5%
…Relative to Peak Capital Losses	($91)	(3.0%)
Bifurcated Alternative as of Dec 31, 2007	$68	2.2%
…Relative to Peak Capital Losses	($100)	(3.3%)
Proposed Risk-based Capital Requirement as of Dec 31, 2007	$171	5.6%
…Relative to Peak Capital Losses	$3	0.1%

** Includes Fannie Mae MBS and Freddie Mac participation certificates held by third parties, and off-balance sheet guarantees related to securitization activities.*

*** Includes the valuation allowance on deferred tax assets of $64 billion, Treasury draws of $20 billion related to senior preferred dividends paid to the Treasury Department between 2008 and the fourth quarter of 2011, and revenues of $78 billion earned over the same period.*

Next, we analyzed Fannie Mae's single-family portfolio in the fourth quarter of 2007 and stripped out the loans that would not be acquired today under Fannie Mae's current acquisition criteria. We then added projected future credit losses for the loans that remained to the already realized credit losses to determine Fannie Mae's lifetime single-family credit losses on that portfolio. In both cases, the credit risk capital requirement would have exceeded the projected lifetime credit losses. As illustrated in the table below, Fannie Mae's estimated single-family credit risk capital requirement of $94 billion as of December 31, 2007 based on the proposed rule would have exceeded Fannie Mae's lifetime single-family credit losses of $85 billion on the December 31,

2007 guarantee portfolio for all loans purchased. In addition, excluding loans that the Enterprises no longer acquire, Fannie Mae's credit risk capital requirement per the proposed rule of $30 billion would have exceeded projected lifetime losses of $21 billion.

Table 2: Fannie Mae's Single-Family Credit Risk Capital Requirement Comparison to Lifetime Single-Family Credit Losses

	$ in billions	% of UPB as of Dec 31, 2007
Lifetime Single-Family Credit Losses on the Dec 31, 2007 Guarantee Portfolio	$85	3.4%
Proposed SF Credit Risk Capital Requirement as of Dec 31, 2007	$94	3.7%
…Relative to Lifetime Credit Losses	$9	0.4%
Lifetime Single-Family Credit Losses on the Dec 31, 2007 Guarantee Portfolio using Current Acquisition Criteria*	$21	1.5%
Proposed SF Credit Risk Capital Requirement using Current Acquisition Criteria*	$30	2.1%
…Relative to Lifetime Credit Losses	$9	0.7%

** Excludes loans with the following characteristics: debt-to-income ratio at origination greater than 50 percent, cash out refinances with total LTV greater than 85 percent, investor loans with total LTV greater than or equal to 90 percent, Alt-A, Negative Amortization, Interest-only, Low or No Documentation, and other legacy programs.*

Freddie Mac

Freddie Mac's statutory minimum capital requirement was $26 billion as of December 31, 2007. For comparison, and as illustrated in the table below, Freddie Mac's estimated minimum leverage capital requirement as of December 31, 2007 based on the proposed rule would have been $54 billion under the 2.5 percent alternative or $53 billion under the bifurcated alternative. Freddie Mac's estimated minimum leverage capital requirement under either proposed alternative as of December 31, 2007 would have been insufficient to cover Freddie Mac's peak cumulative capital losses of $98 billion. However, Freddie Mac's estimated risk-based capital requirement of $110 billion based on the proposed rule would have exceeded Freddie Mac's peak cumulative capital losses of $98 billion by $12 billion. We include in Freddie Mac's peak cumulative capital

losses the valuation allowance on deferred tax assets of $34 billion and revenues of $64 billion earned between 2008 and the first quarter of 2012.

Table 3: Freddie Mac's Capital Requirement Comparison to Peak Cumulative Capital Losses

	$ in billions	% of Total Assets and Off-balance Sheet Guarantees as of Dec 31, 2007*
Net worth as of Dec 31, 2007	$27	1.2%
Cumulative Treasury Draws**	71	3.3%
Peak cumulative losses since Dec 31, 2007	$98	4.5%
Statutory Minimum Capital Requirement as of Dec 31, 2007	$26	1.2%
…Relative to Peak Capital Losses	($72)	(3.3%)
2.5% Alternative as of Dec 31, 2007	$54	2.5%
…Relative to Peak Capital Losses	($44)	(2.0%)
Bifurcated Alternative as of Dec 31, 2007	$53	2.4%
…Relative to Peak Capital Losses	($45)	(2.1%)
Proposed Risk-based Capital Requirement as of Dec 31, 2007	$110	5.0%
…Relative to Peak Capital Losses	$12	0.5%

** Includes Fannie Mae MBS and Freddie Mac participation certificates held by third parties, and off-balance sheet guarantees related to securitization activities.*

*** Includes the valuation allowance on deferred tax assets of $34 billion, Treasury draws of $18 billion related to senior preferred dividends paid to the Treasury Department between 2008 and the first quarter of 2012, and revenues of $64 billion earned over the same period.*

Next, we analyzed Freddie Mac's single-family portfolio in the fourth quarter of 2007 and stripped out the loans that would not be acquired today under Freddie Mac's current acquisition criteria. We then added projected future credit losses for the loans that remained to the already realized credit losses to determine Freddie Mac's lifetime single-family credit losses on that portfolio. After stripping out the loans that would not be acquired under Freddie Mac's current acquisition criteria, the credit risk capital requirement would have exceeded the projected lifetime credit losses. As illustrated in the table below, Freddie Mac's estimated single-family credit risk capital requirement of

$59 billion as of December 31, 2007 based on the proposed rule would not have exceeded Freddie Mac's lifetime single-family credit losses of $64 billion on the December 31, 2007 guarantee portfolio for all loans purchased. However, excluding loans that the Enterprises no longer acquire, Freddie Mac's credit risk capital requirement per the proposed rule of $24 billion would have exceeded projected lifetime losses of $20 billion.

Table 4: Freddie Mac's Single-Family Credit Risk Capital Requirement Comparison to Lifetime Single-Family Credit Losses

	$ in billions	% of UPB as of Dec 31, 2007
Lifetime Single-Family Credit Losses on the Dec 31, 2007 Guarantee Portfolio	$64	3.7%
Proposed SF Credit Risk Capital Requirement as of Dec 31, 2007	$59	3.4%
…Relative to Lifetime Credit Losses	($5)	(0.3%)
Lifetime Single-Family Credit Losses on the Dec 31, 2007 Guarantee Portfolio using Current Acquisition Criteria*	$20	1.7%
Proposed SF Credit Risk Capital Requirement using Current Acquisition Criteria*	$24	2.1%
…Relative to Lifetime Credit Losses	$4	0.4%

** Excludes loans with the following characteristics: debt-to-income ratio at origination greater than 50 percent, cash out refinances with total LTV greater than 85 percent, investor loans with total LTV greater than or equal to 90 percent, Alt-A, Negative Amortization, Interest-only, Low or No Documentation, and other legacy programs.*

Impact of the Proposed Rule as of September 30, 2017

FHFA estimated the impact of the proposed rule on the Enterprises as of September 30, 2017. Under the 2.5 percent alternative, FHFA estimates a combined minimum leverage capital requirement for both Enterprises of $139.4 billion as of September 30, 2017, while under the bifurcated alternative FHFA estimates a combined minimum leverage capital requirement for both Enterprises of $103 billion. FHFA also estimates a combined risk-based capital requirement of $180.9 billion or 3.2 percent of the Enterprises' portfolios as of September 30, 2017. Credit risk capital accounts for $112.0 billion before CRT and $90.5 billion after CRT, market risk capital accounts for

$19.4 billion, operational risk capital accounts for $4.3 billion, and the going-concern buffer accounts for $39.9 billion. The capital requirement for the Enterprises' DTAs accounts for the remaining $26.8 billion. A detailed breakdown of FHFA's estimated risk-based capital requirements by risk category for the Enterprises combined, and separately for Fannie Mae and Freddie Mac, as of September 30, 2017 is presented in Table 5. A breakdown of FHFA's estimated risk-based capital requirements by asset category for the Enterprises combined, as of September 30, 2017, is presented in Table 6. A breakdown of FHFA's estimated minimum leverage capital requirement under both proposed alternatives for the Enterprises combined, and separately for Fannie Mae and Freddie Mac, as of September 30, 2017, is presented in Table 7.

Table 5: Fannie Mae and Freddie Mac Estimated Risk-Based Capital Requirements as of September 30, 2017 – by Risk Category

	Fannie Mae Capital Requirement			Freddie Mac Capital Requirement			Enterprises' Combined Capital Requirement		
	$billions	bps	Share, %	$billions	bps	Share, %	$billions	bps	Share, %
Net Credit Risk	$70.5			$41.5			$112.0		
Credit Risk Transferred	($11.5)			($10.0)			($21.5)		
Post-CRT Net Credit Risk	$59.0	176	51%	$31.5	142	48%	$90.5	162	50%
Market Risk	$9.5	28	8%	$9.9	44	15%	$19.4	35	11%
Going-Concern Buffer	$24.0	72	21%	$15.9	71	24%	$39.9	72	22%
Operational Risk	$2.6	8	2%	$1.7	8	3%	$4.3	8	2%
Other (DTA) *,**	$19.9	59	17%	$6.8	31	10%	$26.8	48	15%
Total Capital Requirement	$115.0	343	100%	$65.9	296	100%	$180.9	324	100%
Total Assets and Off-Balance Sheet Guarantees, $billions	$3,353.1			$2,226.0			$5,579.0		

** The DTA capital requirement is a function of Core Capital. Both Enterprises have negative Core Capital as of September 30, 2017. In order to calculate the DTA capital requirement, we assume Core Capital is equal to the Risk-Based Capital Requirement without consideration of the DTA capital requirement.*

*** Both Enterprises' DTAs were reduced in December 2017 as a result of the change in the corporate tax rate. The risk-based capital requirement for DTAs as of December 31, 2017 would be $10.0 billion or 30 bps for Fannie Mae and $1.2 billion or 5 bps for Freddie Mac. See Table 33 and Table 34 for more detail.*

Table 6: Fannie Mae and Freddie Mac Combined Estimated Risk-Based Capital Requirements for the Enterprises as of September 30, 2017 – by Asset Category

	Capital Requirement		
	$billions	bps*	Share, %
Single-family Whole Loans, Guarantees and Related Securities	$130.5	273	72%
Multifamily Whole Loans, Guarantees and Related Securities	$13.9	278	8%
PLS	$3.4	2,336	2%
CMBS	$0.02	279	0%
Other (DTA)	$26.8	811	15%
Other Assets	$6.3	192	3%
Total Capital Requirement	$180.9		100%

**Basis points (bps) are calculated based on UPB of the respective asset category.*

Table 7: Fannie Mae and Freddie Mac Estimated Minimum Leverage Capital Requirement Alternatives as of September 30, 2017

	$billions		
	Fannie Mae	Freddie Mac	Enterprises Combined
2.5% Minimum Capital Alternative			
2.5% Minimum Capital Alternative Requirement	$83.8	$55.6	$139.5
% of Total Assets and off-balance sheet guarantees	***2.5%***	***2.5%***	***2.5%***
Bifurcated Minimum Capital Alternative			
Bifurcated Minimum Capital Alternative Requirement	$60.4	$43.1	$103.5
% of Total Assets and off-balance sheet guarantees	***1.8%***	***1.9%***	***1.9%***
Requirement for Non-Trust Assets	$16.1	$15.5	$31.6
% of Non-trust Assets	***4%***	***4%***	***4%***
Requirement for Trust Assets	$44.3	$27.6	$71.8
% of Trust Assets	***1.5%***	***1.5%***	***1.5%***
Total Assets plus off-balance sheet guarantees	$3,353	$2,226	$5,579
Non-trust Assets	$403	$388	$791
Trust Assets	$2,950	$1,838	$4,788

C. Risk-Based Capital Requirements

1. Overall Approach

The proposed rule would establish risk-based capital requirements across five categories of the Enterprises' mortgage guarantees and portfolio holdings: 1) single-family whole loans, guarantees, and related securities, 2) private-label mortgage-backed securities (PLS), 3) multifamily whole loans, guarantees, and related securities, 4) commercial mortgage-backed securities (CMBS), and 5) other assets. An additional category, "Unassigned Assets," would provide an approach to assigning capital requirements to new products or activities that do not have an explicit treatment in this rule. Under this proposal, each of these asset and guarantee categories may include capital requirements for three kinds of risk: credit risk, market risk, and operational risk. FHFA's proposal for the credit risk and market risk associated with the five asset and guarantee categories reflects the Agency's view about the relative risks of these assets. The proposed rule would also establish a risk-invariant capital requirement for operational risk that applies across all asset and guarantee categories. Lastly, the proposal would apply a going-concern buffer across all asset and guarantee categories.

Each of the three risk categories (credit risk, market risk, and operational risk), in addition to the going-concern buffer, is further summarized below.

Credit Risk

In evaluating the credit risk faced by the Enterprises, mortgage credit risk can be segmented into the following categories: 1) expected loss; 2) unexpected loss; and 3) catastrophic loss. Expected losses result from the failure of some borrowers to make their payments during stable housing market conditions. Even in a stable and healthy

housing market, some borrowers are likely to default on their loan as a result of certain life events such as illness, job loss, or divorce. Unexpected losses are the potentially much larger losses that could occur above expected losses should there be a stressful, yet plausible, macroeconomic event, such as a severe downturn in house price levels as might accompany a recession. For example, the credit losses that took place during the recent financial crisis and were in excess of the predicted loss amounts would be considered unexpected losses. Catastrophic losses are those losses beyond unexpected loss and would be deemed highly unlikely to occur. In general, losses beyond those experienced during the recent financial crisis would be considered catastrophic losses. However, there is not a bright line marking the transition from unexpected to catastrophic loss.

For purposes of this proposed rule, FHFA defines the risk-based credit risk capital requirement for single-family and multifamily whole loans and guarantees as unexpected loss. As described above, these stress losses are forecasted under scenarios that are generally comparable to stress experienced during the recent financial crisis. The proposed rule would calculate unexpected loss as the difference in the present value of lifetime losses under a stressful macroeconomic event scenario and lifetime losses under an expected scenario. Losses under the expected scenario ("expected losses") are netted out from losses under the stressful macroeconomic event scenario ("stress losses") in order to be consistent with other regulatory regimes. In particular, the loss scenarios draw on conceptual and methodological inputs from regulatory frameworks such as DFAST, CCAR, and the Basel Accords. The Enterprises set guarantee fees at a level to

cover the lifetime cost of expected losses; therefore, there is no need for the Enterprises to hold capital for expected loss.

The starting point of the proposed risk-based credit risk capital requirement for single-family and multifamily whole loans and guarantees would be implemented through a series of look-up tables ("grids and risk multipliers") that take into account loan risk characteristics. The proposed rule would utilize look-up tables because they are simple and transparent, are easily implemented, and allow easy comparison to other capital standards by regulators and the public. As an alternative to the use of look-up tables to implement the risk-based credit risk capital requirement for single-family and multifamily whole loans, FHFA considered using collections of econometric equations ("models"), either the Enterprises' internal models or an FHFA-specified model. FHFA determined that the use of a model would produce more nuanced results than the look-up tables, but would result in greater opacity and operational complexity. Furthermore, the use of the Enterprises' internal models for credit risk was rejected because it would result in inconsistent requirements between the Enterprises for assets with the same risk characteristics.

The proposed rule would use lifetime losses, as opposed to using a shorter horizon, in calculating the credit risk capital requirement in order to fully capture any variation in losses due to differences in loan risk characteristics. For example, if a seven year horizon were used, the risk associated with the payment reset of a multifamily loan with a ten year interest-only period would not be captured in the credit risk capital requirement. Furthermore, the use of lifetime losses is more conservative than a

requirement based on losses over a shorter horizon as it covers the unexpected losses over the lifetime of the loan.

FHFA considered the inclusion of revenues into the credit risk capital requirements to reflect the fact that the Enterprises would be conducting new business and that vast majority of borrowers would continue to pay their mortgage even during a stressful macroeconomic event. For example, at the lowest point during the Great Recession, approximately 92 percent of borrowers with Enterprise guaranteed mortgages were current on their mortgages.[33] On the other hand, FHFA believes there is greater benefit to having a risk-based capital requirement that ensures sufficient capital without considering new revenue. Inclusion of revenues could result in very low or zero risk-based capital requirements for specific portfolio segments. FHFA also considered additional reasons for excluding revenues such as that Basel capital requirements exclude revenue, and that revenue serves to build capital during stress events so that the Enterprises can continue as going concerns.

The proposed rule also would not incorporate the tax deductibility of losses in order to create a simple and transparent measure of risk and to maintain general consistency with other regulatory regimes. Inclusion of the tax deductibility of losses would add significant complexity to the proposed rule. Additionally, FHFA already has an assessment of capitalization, the annual Dodd-Frank Act Stress Test exercise which incorporates revenue, the tax deductibility of losses and accounting impacts.

[33] February 2010 Foreclosure Prevention and Refinance Report.

Question 1: FHFA is soliciting comments on all aspects of the proposed risk-based capital framework. What modifications to the proposed risk-based capital framework should be considered and why?

Market Risk

The Enterprises are exposed to market risk, including interest rate risk and spread risk, through their ownership of whole loans and their investments in MBS. Interest rate risk is the risk of loss from adverse changes in the value of the Enterprises' assets or liabilities due to changes in interest rates. Spread risk is the risk of a loss in value of an asset relative to a risk free or funding benchmark due to changes in perceptions of performance or liquidity. The Enterprises have historically actively managed interest rate risk but have not fully hedged spread risk.

The proposed rule would establish risk-based capital requirements for the market risk associated with single-family whole loans, multifamily whole loans, single-family mortgage-backed securities (MBS) and collateralized mortgage obligations (CMOs), Government National Mortgage Association (Ginnie Mae) single-family and multifamily MBS, PLS, commercial mortgage-backed securities (CMBS), and other assets with market risk exposure held in the Enterprises' respective retained portfolios. While the Enterprises have legacy assets acquired prior to entering conservatorship, such as certain private-label securities investments, the ongoing use of the Enterprises' retained portfolios during conservatorship is now limited to transactions that support the Enterprises' core mortgage guarantee business activities. This includes supporting acquisitions through the cash window primarily for smaller lenders and buying delinquent loans out of securities in order to facilitate loss mitigation activities that

benefit both borrowers and taxpayers. Because the Enterprises' retained portfolio activities have been greatly limited through conservatorship, these portfolios now represent a small share of the Enterprises' overall risk exposure, and the proposed methodology for calculating market risk capital requirements is therefore simple and straightforward. Although FHFA will automatically suspend a final rule because the Enterprises are in conservatorship and cannot build capital, the proposed rule is only intended to address market risks for the Enterprises as they are currently established under conservatorship. In a post-conservatorship housing finance system, FHFA may consider additional methodologies for calculating market risk capital requirements, and FHFA would have the regulatory flexibility to undertake such actions outside the scope of this proposed rulemaking.

The primary target of the risk-based capital requirement for market risk would be spread risk, as the Enterprises closely hedge interest rate risk at the portfolio level through the use of callable debt and derivatives. Spread risk is a loss in value of an asset relative to a risk free or funding benchmark. Generally, spread risk is calculated by multiplying the amount of spread widening by the spread duration of the asset. Spread widening is typically based on historical spread shocks. Spread duration, or the sensitivity of the market value of an asset to changes in the spread, is determined by using models that involve assumptions about interest rate movements and prepayment sensitivity. Prepayment sensitivity reflects the relationship between the volume and timing of cash flows and changes in the interest rate or the spread.

The proposed rule would establish three approaches to determining the risk-based market risk capital requirement, each tailored to the Enterprises' businesses. The first

approach defines market risk capital as a single point estimate provided by the proposed rule. The second approach is a spread duration approach that defines market risk capital by multiplying a spread shock, provided by the proposed rule, by a spread duration generated from an Enterprise's internal models. The third approach defines market risk capital through the exclusive use of an Enterprise's internal models. The proposed rule would assign the Enterprises' assets to one of the three approaches based on: (i) whether the asset belongs to a small and declining portfolio where acquisition is limited as the result of conservatorship, (ii) the relative importance of market risk to credit risk for the asset, and (iii) the complexity of the product structure or prepayment sensitivity.

In general, the proposed rule would assign the simplified single point estimate to assets that are either (i) part of a small and declining portfolio or (ii) where credit risk is the predominant risk. A single point estimate, while simple, may inadequately capture the market risk attributes for assets with complex structures or products with high prepayment sensitivity. For instance, assets with complex structures, such as CMOs, can have different prepayment risk across different tranches, and products with high prepayment sensitivity can have spread durations varying across a wide range of characteristics.

For products with complex structures or high prepayment sensitivity, market risk capital results that rely on internal model calculations (the second and third approaches) could provide more accurate market risk capital estimates when compared with a single point estimate. Therefore, the proposed rule would rely on an Enterprise's internal models only when the market risk complexity is sufficiently high that using a single point estimate would inadequately represent the product's underlying market risk.

Market risk capital requirements resulting from the Enterprises' internal models are derived under an established model risk management governance process that includes FHFA's supervisory review. In particular, FHFA issues advisory bulletins, which are public documents that communicate FHFA's supervisory expectations to FHFA supervision staff and to the Enterprises on specific supervisory matters and topics. In addition, through FHFA's supervision program, FHFA on-site examiners conduct supervisory activities to ensure safe and sound operations of the Enterprises. These supervisory activities may include the examination of the Enterprises to determine whether they meet the expectations set in the advisory bulletins. Examinations may also be conducted to determine whether the Enterprises comply with their own policies and procedures, regulatory and statutory requirements, or FHFA directives.

FHFA's 2013-07 Advisory Bulletin reflects supervisory expectations for an Enterprise's model risk management. The Advisory Bulletin sets minimum thresholds for model risk management and differentiates between large, complex entities and smaller, less complex entities. As the Enterprises are large complex entities that develop and maintain internal market risk models, the Advisory Bulletin subjects them to heightened standards for internal audit, model risk management, model control framework, and model lifecycle management.

Question 2: FHFA is soliciting comments on alternative approaches to determining market risk including using the global market shock component of DFAST, discussed in section I.G. Should alternative approaches be considered and why?

Operational Risk

The proposed rule would establish a risk-invariant capital requirement for operational risk as discussed below. The operational risk capital requirement would be assessed as a fixed capital requirement on the unpaid principal balance of instruments with credit risk or on the market value of instruments with market risk. The Basel Basic Indicator Approach for operational risk would be used to determine the fixed capital requirement.

Going-Concern Buffer

As also discussed below, the proposed rule would also establish a going-concern buffer to ensure the Enterprises have sufficient capital to support the mortgage markets during and after a period of severe financial stress. The going-concern buffer would be assessed as a fixed capital requirement on the unpaid principal balance of instruments with credit risk or on the market value of instruments with market risk.

Question 3: FHFA is soliciting comments on the use of updated risk characteristics, including LTV and credit score, in the proposed risk-based capital requirements, particularly as it relates to the pros and cons of having risk-based capital requirements with elements of pro-cyclicality. Risk-based capital requirements that rely on inputs like house prices and loan risk characteristics that change over time have benefits and drawbacks. On the one hand, using updated risk characteristics such as performance history to determine risk-based capital requirements would result in a more accurate assessment of the risks faced by the Enterprises at any particular point in time within credit and economic cycles. On the other hand, using updated risk characteristics would result in pro-cyclical risk-based capital requirements, which may make it more

difficult for the Enterprises to raise capital during periods of deteriorating credit or economic conditions.

As discussed above, the proposed rule's approach of using mark-to-market LTVs to determine credit risk capital requirements would more accurately represent the Enterprises' current risk profile than would using original LTVs. This is because the current value of a house influences both the probability that a homeowner will default on the mortgage and the magnitude of losses if a homeowner defaults. In times of house price appreciation mark-to-market LTVs would fall and credit risk capital requirements would decrease, while in times of house price depreciation mark-to-market LTVs would rise and credit risk capital requirements would increase. Therefore, not updating LTVs during a market downturn with decreasing house prices would, all else held constant, result in lower risk-based capital requirements relative to using mark-to-market LTVs. In such a scenario, not updating risk characteristics during a stress event could result in risk-based capital requirements being too low because original LTVs would be understated relative to current LTVs that account for decreased home values during the stress event. Whether using original LTVs or mark-to-market LTVs, the proposed credit risk capital requirements in the base grids for new originations are designed to account for a decline in house prices comparable to the 2008 financial crisis.

However, using original LTVs to determine credit risk capital requirements would reduce the pro-cyclicality of the proposed risk-based capital requirements and smooth out the Enterprises' credit risk capital requirements across economic and credit cycles, making the Enterprises' capital planning more predictable. Maintaining original LTVs for single-family loans would, for example, result in higher credit risk capital

requirements during times of house price appreciation, such as the present time, relative to the proposed rule. Because the credit risk capital requirements in the proposed rule are determined using grids based on LTVs, if original LTVs were not updated over time credit risk capital requirements would not increase as a direct result of falling house prices during a market downturn.

Comparing the use of constant or mark-to-market LTVs under the U.S. regulatory implementation of Basel III requires consideration of how the standardized approach and internal ratings-based approach interact with one another. The standardized approach maintains a 50 percent risk weight for mortgages and does not update this risk weight as house prices increase or decrease. The internal ratings-based approach allows, but does not require, institutions to use updated risk factors such as mark-to-market LTVs.

Should FHFA consider reducing the pro-cyclicality of the proposed risk-based capital requirement? For example, should FHFA consider holding LTVs and/or other risk factors constant? What modifications or alternatives, if any, should FHFA consider to the proposed risk-based capital framework, and why?

The next sections discuss the components of FHFA's proposed risk-based capital requirements in more detail. This discussion begins with operational risk, which applies consistently across all of the Enterprises' mortgage loan/asset categories. The discussion continues with the proposed going-concern buffer, which would also apply consistently across all of the Enterprises' asset and guarantee categories. The following sections then discuss risk-based capital requirements for each asset and guarantee category, with subsections that address credit risk and market risk in detail along with summaries of the operational risk and going-concern buffer provisions.

2. Operational Risk

The proposed rule would include an operational risk capital requirement of 8 basis points in the risk-based capital requirement. For assets and guarantees with credit risk, the 8 basis points would be multiplied by the unpaid principal balance of the asset or guarantee. For assets with market risk, the 8 basis points would be multiplied by the market value of the asset. For assets and guarantees with both credit and market risk, the 8 basis points would be multiplied by the unpaid principal balance.

Operational risk is the risk of loss resulting from inadequate or failed internal processes, errors made by people and systems, or from external events. Operational risk is inherent in each Enterprise's business operations. Given the nature of such risks, it is challenging to quantify or estimate operational risk at the asset level. Under the Basel II framework, which requires banks to hold capital related to operational risk, there are three approaches used to measure the operational risk capital requirement: the Basic Indicator Approach, the Standardized Approach, and the Advanced Measurement Approach.[34]

The Basic Indicator Approach is the simplest approach of the three, and it is generally used by banks without significant international operations. The Standardized Approach and the Advanced Measurement Approach employ increasing complexity for calculating operational risk capital requirements. The Advanced Measurement Approach is the most advanced approach and is subject to supervisory approval.[35] In the proposed

[34] *See* the Basel Committee on Banking Supervision – International Convergence of Capital Measurement and Capital Standards, June 2004.

[35] The Basel III framework replaces the collection of Basel II approaches used to measure operational risk with a single, risk-sensitive standardized approach based on two components: 1) a measure of a bank's income, and 2) a measure of a bank's historical losses. The new standardized approach would be used by all banks. *See* https://www.bis.org/bcbs/publ/d424.htm.

rule, FHFA uses the Basic Indicator Approach to calculate the operational risk capital requirement for the Enterprises, as it is simple and transparent, and it ensures a consistent treatment across the Enterprises.

The Basic Indicator Approach requires banks to hold capital for operational risk equal to a fixed percentage (scalar) of the average positive gross income relative to total assets over the previous three years. The scalar of 15 percent is the fixed percentage set by the Basel Committee on Banking Supervision (BCBS), representing the prescribed relationship between operational risk loss and the aggregate level of gross income. The prescribed scalar of 15 percent is consistent with the percentage prescribed for the commercial banking business line under the Basel Standardized Approach. Gross income is defined as net interest income plus net non-interest income. The measure is gross of any provisions and operating expenses, and excludes realized profits or losses from the sale of securities and extraordinary or irregular items.

As reflected in the table below, FHFA calculated the operational risk capital requirement for each Enterprise based on a three-year average of gross income from 2014 to 2016.

Table 8: Operational Risk Capital Requirement

Three Year Average (2014 - 2016)

Amounts in $billions	Fannie Mae	Freddie Mac	Weighted Average
(1) Gross consolidated income	$17.9	$9.8	
(2) Scalar	15%	15%	
(3) Guarantee book of business	$3,064	$1,954	
Capital Requirement (bps) = (1x2)/3	8.7	7.5	8.2

The Basic Indicator Approach

Banks using the Basic Indicator Approach must hold capital for operational risk equal to the average over the previous three years of a fixed percentage (denoted alpha) of positive annual gross income. Figures for any year in which annual gross income is negative or zero should be excluded from both the numerator and denominator when calculating the average. The requirement may be expressed as follows:

$KBIA = [\sum(GI1\ldots n \times \alpha)]/n$

Where:

KBIA = the capital requirement under the Basic Indicator Approach

GI = annual gross income, where positive, over the previous three years

n = number of the previous three years for which gross income is positive

α = 15 percent, which is set by the Committee, relating the industry wide level of required capital to the industry wide level of the indicator.

Gross income is defined as net interest income plus net non-interest income. It is intended that this measure should: (i) be gross of any provisions (*e.g.*, for unpaid interest); (ii) be gross of operating expenses, including fees paid to outsourcing service providers; (iii) exclude realized profits/losses from the sale of securities in the banking book; and (iv) exclude extraordinary or irregular items as well as income derived from insurance.

FHFA combined the Enterprises' results to determine an operational risk capital requirement of 8 basis points.

Question 4: FHFA is soliciting comments on the proposed operational risk capital requirements. Should FHFA consider requiring the Enterprises to calculate operational risk capital requirements using the new standardized approach for operational risk

included in the Basel III framework? What additional modifications to the proposed operational risk capital requirements should be considered and why?

3. Going-Concern Buffer

The proposed rule would include a going-concern buffer of 75 basis points in the risk-based capital requirement. For assets and guarantees with credit risk, the 75 basis points would be multiplied by the unpaid principal balance of the asset or guarantee. For assets or guarantees with market risk, the 75 basis points would be multiplied by the market value of the asset or guarantee. For assets and guarantees with both credit and market risk, the 75 basis points would be multiplied by the unpaid principal balance.

The Enterprises are required by charter to provide liquidity to the mortgage markets during and after a period of severe financial stress. During a period of severe financial distress, the Enterprises would need capital to offset credit and market losses on their existing portfolios, to support the mortgage market by purchasing new loans, and more generally, to maintain market confidence in the Enterprises' securities. Losses on the Enterprises' existing portfolios would deplete capital and would incent the Enterprises to withdraw from riskier segments of the mortgage market in order to preserve capital. Raising new capital during a period of severe housing market stress, like that envisioned in this rule, would be very expensive, if not impossible; therefore, the proposed rule would require the Enterprises to hold additional capital on an on-going basis ("going-concern buffer") in order to continue purchasing loans and to maintain market confidence during a period of severe distress.

To quantify the size of the going-concern buffer, FHFA looked to the Enterprises' DFAST results for the severely adverse scenario. The DFAST severely adverse scenario

specified by FHFA incorporates an assumption that the Enterprises will originate new business during the stress period. DFAST results reflect the impact of the stress scenario on the earnings and capital of each Enterprise.

FHFA calculated the amount of capital necessary for the Enterprises to meet a 2.5 percent leverage requirement at the end of each quarter of the simulation of the severely adverse DFAST scenario (without DTA valuation allowance) and compared that amount to the aggregate risk-based capital requirement. The difference between these two measures provided an indicator for the size of the going-concern buffer. FHFA ultimately determined that the size of the going-concern buffer should be 75 basis points and that the going-concern buffer would be risk-invariant. This approach is useful because it includes a severe stress, an assumption of new business during the severe stress, and an assumption that an Enterprise has enough capital to meet its minimum leverage requirement during and at the end of the stress period, which should contribute to maintaining market confidence. As further validation of the proposed 75 basis points going-concern buffer, FHFA compared the capital obtained by applying the proposed going-concern buffer to the 2017 single-family book of business with the capital required to fund each Enterprise's 2017 new acquisitions. FHFA found the proposed going-concern buffer would provide sufficient capital for each Enterprise to fund an additional one to two years of new acquisitions comparable to their 2017 new acquisitions.

Question 5: FHFA is soliciting comments on the proposed going-concern buffer. What modifications to the proposed going-concern buffer should be considered and why?

4. Single-Family Whole Loans, Guarantees, and Related Securities

This section corresponds to Proposed Rule §§ 1240.5 through 1240.23

Overview

The proposed rule would establish risk-based capital requirements for the Enterprises' single-family whole loans, guarantees, and securities held for investment. The core of the Enterprises' single-family businesses is acquiring and packaging single-family loans into mortgage-backed securities (MBS) and providing credit guarantees on the issued securities. The aim of the proposed single-family capital requirements is to ensure the continued operation of these important single-family business operations throughout periods of economic uncertainty. In the context of the proposed rule, single-family whole loans are single-family mortgage loans acquired by the Enterprises and held in portfolio, including those purchased out of MBS trusts due to issues related to payment performance. Likewise, single-family guarantees are guarantees provided by the Enterprises of the timely receipt of principal and interest payments to investors in mortgage-backed securities (MBS) that have been issued by the Enterprises and are backed by single-family mortgage loans. Except in cases where they transfer the risk to private investors, the Enterprises are exposed to credit risk through their ownership of single-family whole loans and guarantees issued on MBS. In addition, the Enterprises are exposed to market risk through their ownership of single-family whole loans and mortgage-backed securities held for investment purposes.

To implement the proposed single-family capital requirements, the Enterprises would use a set of single-family grids and risk multipliers to calculate credit risk capital, as well as a collection of straightforward formulas to calculate market risk capital, operational risk capital, and a going-concern buffer.

The proposed rule would first establish a framework through which the Enterprises would calculate their gross single-family credit risk capital requirements. The proposed methodology is simple and transparent, relying on a set of look-up tables (grids and risk multipliers) that would account for many important single-family risk factors in the calculation of gross credit risk capital requirements, including loan characteristics such as age, payment performance, loan-to-value (LTV), and credit score.

The proposed grid and multiplier framework is consistent with existing financial regulatory regimes, and would therefore facilitate comparison to those regimes and promote understanding of the framework's methodology and resulting capital requirements. In particular, the proposed rule is conceptually and methodologically similar to regulatory frameworks such as DFAST, CCAR, and the Basel Accords. FHFA believes that this straightforward and transparent approach, as opposed to one involving a complex set of credit models and econometric equations, would provide sufficient risk differentiation across the Enterprises' single-family businesses without obfuscating capital calculations or placing undue implementation and compliance burdens on the Enterprises.

Next, the proposed rule would provide a mechanism through which the Enterprises would calculate net credit risk capital requirements for single-family whole loans and guarantees by accounting for the benefits associated with loan-level credit enhancements such as mortgage insurance, while also accounting for the counterparty credit risk associated with third parties such as mortgage insurance companies.

The proposed rule would then provide a mechanism for the Enterprises to calculate capital relief by reducing net single-family credit risk capital requirements

based on the amount of loss shared or risk transferred to private sector investors through the Enterprises' respective credit risk transfer programs. Collectively, the Enterprises engage in a variety of types of single-family credit risk transfer transactions, and this aspect of the proposed rule would account for differences in the Enterprises' single-family business models.

The proposed rule would establish market risk capital requirements for single-family whole loans and mortgage-backed securities held for investment. The proposed methodology would account for spread risk using either simple formulas or the Enterprises' internal models, depending on the risk characteristics of the single-family whole loans or guarantees being considered.

In addition, the proposed rule would establish an operational risk capital requirement for the Enterprises' single-family businesses that is invariant to risk. The proposed operational risk capital requirement is based on the Basel Basic Indicator Approach and would require the Enterprises to calculate operational risk capital as a fixed percentage of total unpaid principal balances or market values, depending on whether the Enterprises retain both credit and market risk for particular single-family assets or merely market risk.

Finally, as described above, the proposed rule would establish a going-concern buffer for the Enterprises' single-family businesses that is also invariant to risk with the objective of ensuring that, when combined with Enterprise revenue, the Enterprises have sufficient capital to continue operating their single-family businesses during and after a period of severe financial distress. Under the proposed rule, the Enterprises would be required to calculate the single-family going-concern buffer as a fixed percentage of total

unpaid principal balances or market values, depending on whether the Enterprises retain both credit and market risk for particular single-family assets or merely market risk.

Single-Family Business Model

The proposed rule would apply equally to both Enterprises regardless of differences in their single-family business models. Although the Enterprises operate independently of one another, the common core of their single-family businesses is the acquisition of single-family mortgage loans from mortgage companies, commercial banks, credit unions, and other financial institutions, packaging those loans into mortgage-backed securities (MBS), and selling the MBS either back to the original lenders or to other private investors in exchange for a fee that represents a guarantee of timely principal and interest payments on those securities.

The Enterprises engage in the acquisition and securitization of single-family mortgages primarily through two types of transactions: lender swap transactions and cash window transactions. In a lender swap transaction, lenders pool similar single-family loans together and deliver the pool of loans to an Enterprise in exchange for an MBS backed by those single-family mortgage loans, which the lenders generally then sell in order to use the proceeds to fund more mortgage loans. In a cash window transaction, an Enterprise purchases single-family loans from a large, diverse group of lenders and then securitizes the acquired loans into an MBS to sell at a later date. For MBS issued as a result of either lender swap transactions or cash window transactions, the Enterprises provide investors with a guarantee of the timely receipt of payments in exchange for a guarantee fee. Single-family loans that have been purchased but have not yet been securitized are held in the Enterprises' whole loan portfolios. In addition, the Enterprises

also repurchase loans that have been delinquent for four or more consecutive months from the MBS they guarantee.

The Enterprises are exposed to credit risk through their ownership of single-family whole loans and the guarantees they issue on MBS. The Enterprises may incur a credit loss when borrowers default on their mortgage payments, so the Enterprises attempt to mitigate the likelihood of incurring such a loss in a variety of ways. One way to reduce potential credit losses is through the use of credit enhancements such as primary mortgage insurance. Credit enhancement is required by the Enterprises' charter acts for single-family loans with loan-to-value ratios over 80 percent.[36] In addition to loan-level credit enhancements, the Enterprises may, and indeed often do, engage in pool-level credit risk transfer transactions (CRT) in order to transfer a portion of their retained single-family credit risk to investors.

Rule Framework and Implementation

The proposed rule would establish risk-based capital requirements for the Enterprises' single-family businesses, including requirements for their whole loans, guarantees, and securities held for investment. Using the proposed requirements, the Enterprises would calculate the minimum amount of funds needed to continue their single-family business operations under stressed economic conditions, as discussed in detail below. The proposed single-family capital requirements would have the following components: credit risk capital, including relief for credit risk transfers; market risk

[36] The charter acts permit three types of credit enhancement for such high-LTV loans, but private mortgage insurance is by far the most commonly used.

capital; operational risk capital; and a going-concern buffer. Each component is discussed in detail in the ensuing subsections.

a. Credit Risk

This section corresponds to Proposed Rule §§ 1240.5 through 1240.13

Single-Family Whole Loans and Guarantees

The proposed rule would establish credit risk capital requirements for the Enterprises' conventional single-family whole loans and guarantees. For reasons discussed below, loans with a government guarantee would not be subject to the credit risk capital requirement. The single-family credit risk capital requirements would determine the minimum funding necessary to cover the difference between estimated lifetime credit losses in severely adverse economic conditions (alternatively referred to as stress losses) and expected losses. As adverse economic conditions are not explicitly defined, the loss projections that underpin the credit risk capital requirements in the proposed rule are based on several different economic scenarios.

Each Enterprise used economic scenarios that they defined to project loan-level credit risk capital. In addition, FHFA leveraged the baseline and severely adverse scenario defined in the Dodd Frank Act Stress Tests (DFAST) to project expected and stress losses. The DFAST scenarios are well understood economic conditions updated annually by the Federal Reserve Board. FHFA used these pre-existing scenarios as a starting point for its estimations in order to provide economic scenarios consistent with those issued by other regulators to large financial institutions for stress tests required under DFAST. FHFA also used these scenarios to ensure a straightforward, transparent approach to the proposed rule's capital requirements. The DFAST scenarios include

forecasts for macroeconomic variables including home prices, interest rates, and unemployment rates.

Home prices are generally considered to be the most important determinant of a strong single-family housing market. Home prices are used to define the loan-to-value ratio, where the likelihood of a loss occurring upon default increases as the proportion of equity to loan value deceases. Therefore, the projected home price path is the predominant macroeconomic driver for the requirements single-family stress scenarios.

The Enterprises used similar house price paths to project credit risk capital. In the stress scenarios used by FHFA and the Enterprises, nationally averaged home prices declined by 25 percent from peak to trough (the period of time between the shock and the recovery), which is consistent with the decline in home prices observed during the recent financial crisis. The 25 percent home price decline is also consistent with assumptions used in the DFAST severely adverse scenario over the past several years, although the 2017 DFAST cycle assumes a 30 percent home price decline in its severely adverse scenario. However, the trough and recovery assumptions used by FHFA and the Enterprises are somewhat more conservative than the observed house price recoveries post crisis. The single-family credit risk capital grids, discussed below, reflect estimations of stress losses and expected losses under these severely adverse economic conditions.

The proposed rule would require the Enterprises to calculate credit risk capital requirements for single-family whole loans and guarantees by completing the following simplified steps:

1) Determine base single-family credit risk capital requirements using single-family-specific credit risk capital grids;
2) Determine gross single-family credit risk capital requirements by adjusting base single-family credit risk capital requirements for additional risk characteristics using a set of single-family-specific risk multipliers;
3) Determine net single-family credit risk capital requirements by adjusting gross single-family credit risk capital requirements for loan-level credit enhancements, including accounting for counterparty risk; and
4) Determine capital relief from net single-family credit risk capital requirements due to credit risk transfer transactions.

Base Credit Risk Capital Requirements

This section corresponds to Proposed Rule §§ 1240.5 through 1240.16

The proposed rule would require the Enterprises to calculate base credit risk capital requirements for single-family whole loans and guarantees using a set of five look-up tables or grids, one for each single-family loan segment. Accordingly, for the purpose of the proposed rule, the Enterprises would categorize their single-family whole loans and guarantees into five loan segments, with each loan segment representing a different period in the possible life cycle of a single-family mortgage loan.

The proposed single-family loan segments are based on age and payment performance because the expectation of a credit loss depends heavily on these two risk factors. Additional risk factors affect the expectation of credit loss differently depending on where a loan is in its life cycle. The amount of credit risk capital required for a single-family whole loan or guarantee therefore would change over the life cycle of a loan,

decreasing when the loan is seasoned and performing, and increasing when the loan is delinquent or has recently experienced delinquency. These dynamics are often captured in credit loss forecasts by estimating different mortgage performance equations for loans in different life-cycle stages. The proposed rule would capture these dynamics in a similar fashion by having five different single-family credit risk capital grids and sets of multipliers for whole loans and guarantees in different life-cycle stages. The five proposed loan segments for single-family whole loans and guarantees are:

- New originations: loans that were originated within 5 months of the capital calculation date and have never been 30-days delinquent. Streamlined refinance loans, including HARP loans, are excluded from this category.
- Performing seasoned: loans that were originated at least 5 months before the capital calculation date and have been neither 30-days delinquent nor modified within 36 months of the capital calculation date. Newly originated streamlined refinance loans, including HARP loans, are included in this category.
- Non-modified re-performing: loans that are currently performing and have had a prior 30-day delinquency, but not a prior modification.
- Modified re-performing: loans that are currently performing and have had a prior 30-day delinquency and a prior modification.
- Non-performing: loans that are currently at least 30-days delinquent.

Each single-family loan segment would have a unique two-dimensional credit risk capital grid that the Enterprises would use to calculate base credit risk capital requirements for every whole loan and guarantee in the loan segment. The dimensions of

the credit risk capital grids would vary by loan segment to allow the grids to differentially incorporate key risk drivers into the base credit risk capital requirements on a segment-by-segment basis. For example, current (refreshed) credit scores and mark-to-market LTV (MTMLTV) are two primary drivers of credit losses in performing seasoned loans, while a primary driver of credit losses in modified re-performing loans (RPL) is the payment change due to modification. Accordingly, the dimensions of the credit risk capital grids for these segments would reflect the respective primary drivers of risk.

The credit risk capital grid for each single-family loan segment would determine the base credit risk capital requirement for any single-family whole loan or guarantee in that loan segment (where the base credit risk capital requirement refers to a capital calculation that does not yet recognize either the full impact of risk factors that are not one of the base grid's two dimensions or loan-level credit enhancements). The proposed grids were populated after carefully considering a combination of estimates of credit risk capital from the Enterprises' internal models and FHFA's models. To derive the underlying estimates for each loan segment's credit risk capital grid, the Enterprises were asked to run their single-family credit models using comparable stressed economic conditions, as discussed above, and synthetic loans with a baseline risk profile with respect to risk factors other than those represented in the dimensions of the segment's credit risk capital grid.[37] In the proposed rule, each single-family loan segment has its own baseline risk profile, which is discussed segment-by-segment below. Consequently, each cell of the single-family credit risk capital grids represents an estimated difference,

[37] In the context of this rule, a baseline risk profile means that the secondary risk factors included in each baseline synthetic loan take values such that they would receive a risk multiplier of 1.0, as discussed further in section II.C.4.a.

in basis points, between estimated stress losses and expected losses for a segment-specific, baseline synthetic loan with a particular combination of primary risk factors as described in the grid's dimensions. In the proposed rule, this capital requirement, in basis points, would be applied to the unpaid principal balance (UPB) of each conventional single-family whole loan and guarantee held by the Enterprises with exposure to credit risk.

FHFA believes that constructing the proposed base credit risk capital grids in this manner provides for sufficient levels of granularity, accuracy, and transparency in the credit risk capital calculations. Each single-family whole loan and guarantee is segmented first by age and payment performance, then broken down further by its two primary risk drivers while simultaneously considering "typical" values for secondary risk drivers (which are further accounted for in the calculation of gross credit risk capital requirements using risk multipliers). FHFA carefully evaluated its own model estimations using these categorizations, as well as estimations provided by the Enterprises. The credit risk capital requirements in the five proposed grids do not take into account the effect of credit enhancements such as mortgage insurance and generally represent averages of the individual estimations, although in certain cases adjustments were made to ensure the capital requirements were reasonable. In addition, the risk factor breakpoints and ranges represented in the grids' dimensions were chosen in light of FHFA analysis and internal discussions, as well as discussions with the Enterprises. FHFA concluded that the proposed breakpoints and ranges would combine to form sufficiently granular pairwise buckets without imposing an undue compliance burden on the Enterprises. The proposed process for calculating credit risk capital requirements is

therefore straightforward, and does not rely on quarterly calculations of complicated, opaque economic models or econometric equations.

Base Credit Risk Capital Grids by Loan Segment

New Originations

The primary risk factors for single-family whole loans and guarantees in the new originations loan segment are original credit score and original loan-to-value (OLTV). The dimensions in the segment's credit risk capital grid would reflect these two risk factors. Original credit score correlates strongly with the probability of a borrower default, while OLTV relates to the severity of a potential loss should a borrower default (loss given default). Credit score and OLTV are often used by lenders to price new loans.

The proposed single-family credit risk capital grid for new originations is presented in Table 9.

Table 9: Single-Family New Originations Base Credit Risk Capital (in bps)

	OLTV <= 30%	30% < OLTV <= 60%	60% < OLTV <= 70%	70% < OLTV <= 75%	75% < OLTV < 80%	OLTV = 80%	80% < OLTV <= 85%	85% < OLTV <= 90%	90% < OLTV <= 95%	95% < OLTV <= 97%	OLTV > 97%
Original Credit Score < 620	10	108	293	437	571	652	779	958	1134	1219	1357
620 <= Original Credit Score < 640	10	84	234	350	459	518	617	764	913	969	1108
640 <= Original Credit Score < 660	10	73	203	305	400	451	537	667	802	864	974
660 <= Original Credit Score < 680	10	63	177	264	346	390	468	589	719	779	865
680 <= Original Credit Score < 700	10	53	154	230	300	339	405	528	656	716	802
700 <= Original Credit Score < 720	10	46	134	199	259	293	344	452	566	620	700
720 <= Original Credit Score < 740	10	39	115	171	222	251	300	400	507	557	633
740 <= Original Credit Score < 760	10	31	95	141	183	206	244	326	417	459	525
760 <= Original Credit Score < 780	10	25	77	114	148	166	195	262	339	374	431
Original Credit Score >= 780	10	19	59	87	113	127	148	200	258	286	331

Credit scores have values ranging from 300 to 850, and LTVs at origination typically range from 10 percent to 97 percent. FHFA chose the ranges and breakpoints represented in the dimensions of the Table 9 after reviewing the distributions of unpaid principal balances in the Enterprises' single-family businesses. FHFA notes that the Enterprises currently rely on Classic FICO for product eligibility, loan pricing, and financial disclosure purposes, and therefore the base grid for new originations was estimated using Classic FICO credit scores.[38] Furthermore, throughout the proposed rule, the use of credit scores should be interpreted to mean Classic FICO credit scores. If the Enterprises were to begin using a different credit score for these purposes, or multiple scores, the grid for new originations, along with any other grid reliant on credit scores, would need to be recalibrated. In the proposed grid for new originations, OLTV ranges are more granular between OLTVs of 70 and 95 percent, where the Enterprises conduct the majority of their new single-family businesses. In addition, the credit risk capital grid for new originations has a separate category for loans with an 80 percent OLTV to account for the high volume and distinct features of these particular loans. Under the Enterprises' charter acts, 80 percent represents the maximum LTV for which loans do not require credit enhancement, which creates an incentive for borrowers to finance exactly 80 percent of a home's value. The grid in Table 9 presents proposed capital requirements before taking into account credit enhancements such as mortgage insurance, which would lower the Enterprises' net capital requirements for single-family loans with an OLTV greater than 80 percent. For example, for a single-family 30-year amortizing loan with

[38] FHFA has issued a Request for Input on Fannie Mae and Freddie Mac Credit Score Requirements. *See* https://www.fhfa.gov/Media/PublicAffairs/Pages/FHFA-Issues-Request-for-Input-on-Fannie-Mae-and-Freddie-Mac-Credit-Score-Requirements.aspx.

guide-level mortgage insurance coverage and an OLTV of 93 percent, mortgage insurance would reduce the Table 9 gross credit risk capital requirement by 69 percent (see Table 15) prior to counterparty haircut adjustments. Subsequent tables 10 through 13 are also presented before taking into account credit enhancements.

Aside from the primary risk factors represented in the dimensions of Table 9, there are several secondary risk factors accounted for in the risk profile of the synthetic loan used in the estimations underlying the credit risk capital requirements presented in Table 9. Those secondary risk factors, along with the values that determine the baseline risk profile for the credit risk capital grid for new originations, are as follows: loan age less than six months, 30-year fixed rate, purchase, owner-occupied, single-unit, retail channel sourced, debt-to-income ratio between 25 percent and 40 percent, loan size greater than $100,000, no second lien, and has multiple borrowers. Variations from these risk characteristics would make the whole loan or guarantee more or less risky and would result in a higher or lower credit risk capital requirement relative to the base credit risk capital requirement. In the proposed rule, variations in these secondary risk factors would be captured using risk multipliers as described in the next section.

Performing Seasoned Loans

The primary risk factors for single-family whole loans and guarantees in the performing seasoned loan segment are refreshed credit score and mark-to-market loan-to-value (MTMLTV). The dimensions in the segment's credit risk capital grid would reflect these two risk factors. The more seasoned a loan gets, or the longer it has been since the loan was originated, the less relevant its original credit score and original LTV become.

But since credit score and LTV still relate strongly to the probability of default and loss given default, respectively, refreshed (updated) values of these two important risk factors are used as the primary risk factors and dimensions. The proposed single-family credit risk capital grid for whole loans and guarantees in the performing seasoned loan segment is presented in Table 10.

Table 10: Single-Family Performing Seasoned Loans Base Credit Risk Capital (in bps)

	MTMLTV <= 30%	30% < MTMLTV <= 60%	60% < MTMLTV <= 70%	70% < MTMLTV <= 75%	75% < MTMLTV <= 80%	80% < MTMLTV <= 85%	85% < MTMLTV <= 90%	90% < MTMLTV <= 95%	95% < MTMLTV <= 100%	100% < MTMLTV <= 110%	110% < MTMLTV <= 120%	MTMLTV > 120%
Refreshed Credit Score < 620	10	108	293	437	636	779	958	1134	1312	1491	1656	1911
620 <= Refreshed Credit Score < 640	10	84	234	350	506	617	764	913	1075	1252	1426	1700
640 <= Refreshed Credit Score < 660	10	73	203	305	441	537	667	802	959	1124	1291	1555
660 <= Refreshed Credit Score < 680	10	63	177	264	381	468	589	719	852	1010	1172	1425
680 <= Refreshed Credit Score < 700	10	53	154	230	331	405	528	656	754	905	1059	1295
700 <= Refreshed Credit Score < 720	10	46	134	199	286	344	452	566	663	806	950	1168
720 <= Refreshed Credit Score < 740	10	39	115	171	245	300	400	507	578	710	842	1037
740 <= Refreshed Credit Score < 760	10	31	95	141	201	244	326	417	483	599	715	884
760 <= Refreshed Credit Score < 780	10	25	77	114	162	195	262	339	393	493	594	737
Refreshed Credit Score >= 780	10	19	59	87	124	148	200	258	301	382	463	578

Credit scores have values ranging from 300 to 850, and MTMLTVs typically range from 10 percent to upwards of 120 percent. FHFA chose the ranges and breakpoints represented in the dimensions of the Table 10 after reviewing the distributions of unpaid principal balances in the Enterprises' single-family seasoned loan businesses. In the proposed credit risk capital grid for performing seasoned loans, FHFA included MTMLTV buckets beyond 95 percent to account for adverse changes in home prices subsequent to loan origination, as well as to account for the inclusion of streamlined refinance loans in the segment. In addition, loans with an 80 percent LTV are no longer highlighted.

Aside from the primary risk factors represented in the dimensions of Table 10, there are several secondary risk factors accounted for in the risk profile of the synthetic loans used in the estimations underlying the credit risk capital requirements presented in Table 10. Those secondary risk factors, along with the values that determine the baseline risk profile for the credit risk capital grid for performing seasoned loans, are: loan age between six months and 12 months, 30-year fixed rate, purchase, owner-occupied, single-unit, retail channel sourced, debt-to-income ratio between 25 percent and 40 percent, loan size greater than $100,000, no second lien, has multiple borrowers, full documentation for documentation level, non-interest-only for amortization type, not streamlined refinance loans, and zero refinance (cohort) burnout (described below). Several of these risk factors, such as documentation level, interest-only, and those related to refinancing, are included in the performing seasoned loan segment despite the fact that they are not included in the new originations segment, in some cases due to the Qualified Mortgage

rule that prohibits interest-only and low-documentation loans on new originations. However, these risk factors may be present on loan originated prior to the financial crisis. Variations from these risk characteristics would make the whole loan or guarantee more or less risky and would result in a higher or lower credit risk capital requirement relative to the base credit risk capital requirement. In the proposed rule, variations in these secondary risk factors would be captured using risk multipliers as described in the next section.

Non-Modified Re-Performing Loans

The primary risk factors for single-family whole loans and guarantees in the non-modified re-performing loan segment are re-performing duration and MTMLTV. The dimensions in the segment's credit risk capital grid would reflect these two risk factors. Re-performing duration is the number of months since a whole loan or guarantee was last delinquent, and is a strong predictor of the likelihood of a subsequent default for re-performing loans that have cured without prior modifications. MTMLTV is a strong predictor of loss given default for whole loans and guarantees in this segment.

The proposed single-family credit risk capital grid for whole loans and guarantees in the non-modified re-performing loan segment is presented in Table 11.

Table 11: Single-Family Non-Modified Re-Performing Loans Base Credit Risk Capital (in bps)

		MTMLTV <= 30%	30% < MTMLTV <= 60%	60% < MTMLTV <= 70%	70% < MTMLTV <= 75%	75% < MTMLTV <= 80%	80% < MTMLTV <= 85%	85% < MTMLTV <= 90%	90% < MTMLTV <= 95%	95% < MTMLTV <= 100%	100% < MTMLTV <= 110%	110% < MTMLTV <= 120%	MTMLTV > 120%
Months Since Last Delinquency	0 < Months <= 3	8	122	315	433	525	658	763	843	929	1002	1085	1125
	3 < Months <= 12	7	88	245	340	421	522	623	708	791	882	1002	1106
	12 < Months <= 36	6	67	202	285	353	431	523	607	693	795	938	1093
	36 < Months <= 48	8	46	132	198	285	349	447	550	642	766	893	1088

In the proposed rule, re-performing duration is divided into four categories such that credit risk capital requirements would decrease as re-performing duration increases. When the re-performing duration is greater than three years, the proposed credit risk capital requirement for a re-performing loan would approximate the credit risk capital requirements for a performing seasoned loan. Loans that re-perform for greater than four years, and have not been modified, would revert to being classified as performing seasoned and use the appropriate credit risk capital grid. The proposed ranges and breakpoints for MTMLTV are unchanged from those found in the performing seasoned loan grid (Table 10).

Aside from the primary risk factors represented in the dimensions of Table 11, there are many secondary risk factors accounted for in the risk profile of the synthetic loan used in the estimations underlying the credit risk capital requirements presented in Table 11. In particular, although much of the predictive power of current credit score is captured by re-performing duration, variations in credit score are still accounted for through a multiplier. These secondary risk factors, along with the values that determine the baseline risk profile for the credit risk capital grid for non-modified re-performing loans, are the same as those for performing seasoned loans with the inclusion of two additional features: refreshed credit scores between 660 and 700, and a maximum previous delinquency of one month. Variations from these risk characteristics would make the whole loan or guarantee more or less risky and would result in a higher or lower credit risk capital requirement relative to the base credit risk capital requirement. In the proposed rule, variations in these secondary risk factors would be captured using risk multipliers as described in the next section.

Modified Re-Performing Loans

The primary risk factors for single-family whole loans and guarantees in the modified re-performing loan segment are similar to those in the non-modified re-performing loan segment. However, along with the MTMLTV, the second primary risk factor in the modified re-performing segment is either the re-performing duration or the performing duration, whichever is smaller. The re-performing duration measures the number of months since the last delinquency, while the performing duration measures the number of months a loan has been performing since it was last modified. The dimensions in the segment's credit risk capital grid would reflect these risk factors.

The proposed single-family credit risk capital grid for whole loans and guarantees in the modified re-performing loan segment is presented in Table 12.

Table 12: Single-Family Modified Re-Performing Loans Base Credit Risk Capital (in bps)

		MTMLTV <= 30%	30% < MTMLTV <= 60%	60% < MTMLTV <= 70%	70% < MTMLTV <= 75%	75% < MTMLTV <= 80%	80% < MTMLTV <= 85%	85% < MTMLTV <= 90%	90% < MTMLTV <= 95%	95% < MTMLTV <= 100%	100% < MTMLTV <= 110%	110% < MTMLTV <= 120%	MTMLTV > 120%
Minimum of (1) Months Since Last Modification and (2) Months Since Last Delinquency	0 < Months <= 3	14	195	474	613	715	806	904	993	1061	1120	1177	1222
	3 < Months <= 12	13	153	388	506	593	678	776	868	946	1024	1112	1217
	12 < Months <= 36	12	119	314	415	493	576	671	767	849	949	1056	1212
	36 < Months <= 48	11	84	220	313	425	500	611	733	830	939	1046	1207

Aside from the primary risk factors represented in the dimensions of Table 12, there are many secondary risk factors accounted for in the risk profile of the synthetic loan used in the estimations underlying the credit risk capital requirements presented in Table 12. These secondary risk factors, along with the values that determine the baseline risk profile for the credit risk capital grid for modified re-performing loans, are the same as those for non-modified re-performing loans. Variations from these risk characteristics would make the whole loan or guarantee more or less risky and would result in a higher or lower credit risk capital requirement relative to the base credit risk capital requirement. In the proposed rule, variations in these secondary risk factors would be captured using risk multipliers as described in the next section.

Contrary to re-performing single-family loans that have not been modified, loans in the modified re-performing loan segment never revert to being classified as performing seasoned loans, even after four or more years of re-performance.

Non-Performing Loans

The primary risk factors for single-family whole loans and guarantees in the non-performing loan (NPL) segment are delinquency level and MTMLTV. The dimensions in the segment's credit risk capital grid would reflect these two risk factors. In the proposed rule, a non-performing single-family loan is a loan where at least the most recent payment has been missed. The delinquency level of a non-performing whole loan or guarantee is the number of payments missed since the loan became delinquent, and is a strong predictor of the likelihood of default for non-performing loans. MTMLTV is a strong predictor of loss given default for whole loans and guarantees in this segment.

The proposed single-family credit risk capital grid for whole loans and guarantees in the non-performing loan segment is presented in Table 13.

Table 13: Single-Family Non-Performing Loans Base Credit Risk Capital (in bps)

		MTMLTV <= 30%	30% < MTMLTV <= 60%	60% < MTMLTV <= 70%	70% < MTMLTV <= 75%	75% < MTMLTV <= 80%	80% < MTMLTV <= 85%	85% < MTMLTV <= 90%	MTMLTV > 90%
Number of Missed Payments	1	46	387	1054	1195	1300	1404	1496	1663
	2	60	507	1233	1374	1462	1535	1612	1695
	3-6	80	603	1315	1437	1503	1556	1600	1638
	>=7	198	884	1565	1619	1650	1659	1667	1577

The capital requirements detailed in Table 13 are non-monotonic as the number of missed payments increases, particularly in the highest (right-most) MTMLTV column. This is because as the number of missed payments increases for a non-performing loan with a very high LTV, so does the expected loss. Because capital is defined as the difference between stress loss and expected loss, when expected loss increases and grows closer to stress loss, the capital requirement shrinks. The increase in expected loss is reflected in commensurately higher loss reserves.

Aside from the primary risk factors represented in the dimensions of Table 13, there are many secondary risk factors accounted for in the risk profile of the synthetic loan used in the estimations underlying the credit risk capital requirements presented in Table 13. These secondary risk factors, along with the values that determine the baseline risk profile for the credit risk capital grid for non-performing loans, are the same as those for performing seasoned loans, with the inclusion of one additional feature: refreshed credit scores between 640 and 700. Variations from these risk characteristics would make the whole loan or guarantee more or less risky and would result in higher or lower

credit risk capital requirement relative to the base credit risk capital requirement. In the proposed rule, variations in these secondary risk factors would be captured using risk multipliers as described in the next section.

Gross Credit Risk Capital Requirements

After the Enterprises calculate base credit risk capital requirements for single-family whole loans and guarantees using the single-family credit risk capital grids, the proposed rule would require the Enterprises to calculate gross credit risk capital requirements by adjusting the base credit risk capital requirements to account for additional loan characteristics using a set of single-family-specific risk multipliers. The proposed risk multipliers would refine single-family base credit risk capital requirements to account for risk factors beyond the primary risk factors reflected in the credit risk capital grids, and for variations in secondary risk factors not captured in the risk profiles of the synthetic loans underlying the credit risk capital grids. Gross single-family credit risk capital requirements would be the product of base single-family credit risk capital requirements and the single-family risk multipliers.

The proposed single-family risk multipliers represent common characteristics that increase or decrease the riskiness of a single-family whole loan or guarantee. Therefore, the proposed rule would provide a mechanism through which single-family credit risk capital requirements would be adjusted and refined up or down to reflect a more or less risky loan profile, respectively. FHFA believes that risk multipliers would provide for a simple and transparent characterization of the risks associated with different types of single-family whole loans and guarantees, and an effective way of adjusting credit risk capital requirements for those risks. Although the specified risk characteristics are not

exhaustive, they capture key real estate loan performance drivers, and are commonly used in mortgage loan underwriting and rating. For these reasons, FHFA believes the use of risk multipliers in general, and the proposed risk multipliers in particular, would facilitate analysis and promote understanding of the Enterprises' single-family credit risk capital requirements while mitigating concerns associated with compliance and complex implementation.

The proposed risk multiplier values were determined using FHFA staff analysis and expertise, and in consideration of the Enterprises' contribution of model results and business expertise. To derive the proposed risk multiplier values, the Enterprises were asked to run their single-family credit models using comparable stressed economic conditions, as discussed above, and synthetic loans with a baseline risk profile with respect to risk factors other than those represented in the dimensions of each segment's credit risk capital grid. The segment-specific secondary risk factors, and their segment-specific baseline risk values, are discussed in detail in the prior section. The Enterprises then varied the secondary risk factors, by loan segment, to estimate each risk factor's multiplicative effects on the Enterprises' base credit risk capital projections (stress losses minus expected losses) for baseline whole loans and guarantees in each loan segment. FHFA then considered the multiplier values estimated by the Enterprises, which were generally consistent in magnitude and direction, in conjunction with its own estimated values before combining values to determine the proposed single-family risk multipliers. The proposed single-family risk multipliers are presented in Table 14.

Table 14: Single-Family Risk Multipliers

		Risk Multipliers by Single-Family Loan Segment				
Risk Factor	**Value or Range**	**New Originations**	**Performing Seasoned**	**Non-Modified RPL**	**Modified RPL**	**NPL**
Loan Purpose	Purchase	1.0	1.0	1.0	1.0	
	Cashout Refinance	1.4	1.4	1.4	1.4	
	Rate/Term Refinance	1.3	1.3	1.2	1.3	
	Other	1.0	1.0	1.0	1.0	
Occupancy Type	Owner Occupied or Second Home	1.0	1.0	1.0	1.0	1.0
	Investment	1.2	1.2	1.5	1.3	1.2
Property Type	1-Unit	1.0	1.0	1.0	1.0	1.0
	2-4 Unit	1.4	1.4	1.4	1.3	1.1
	Condominium	1.1	1.1	1.0	1.0	1.0
	Manufactured Home	1.3	1.3	1.8	1.6	1.2
Number of Borrowers	Multiple borrowers	1.0	1.0	1.0	1.0	1.0
	One borrower	1.5	1.5	1.4	1.4	1.1
Third-Party Origination Channel	Non-TPO	1.0	1.0	1.0	1.0	1.0
	TPO	1.1	1.1	1.1	1.1	1.0
DTI	DTI <= 25%	0.8	0.8	0.9	0.9	
	25% < DTI <= 40%	1.0	1.0	1.0	1.0	
	DTI > 40%	1.2	1.2	1.2	1.1	
Product Type	FRM 30 year	1.0	1.0	1.0	1.0	1.0
	ARM 1/1	1.7	1.7	1.1	1.0	1.1
	FRM 15 year	0.3	0.3	0.3	0.5	0.5
	FRM 20 year	0.6	0.6	0.6	0.5	0.8
Loan Size	UPB <= $50,000	2.0	2.0	1.5	1.5	1.9
	$50,000 < UPB <= $100,000	1.4	1.4	1.5	1.5	1.4
	UPB > $100,000	1.0	1.0	1.0	1.0	1.0
Subordination (OTLV x Second Lien)	No subordination	1.0	1.0	1.0	1.0	
	30% < OLTV <= 60% and 0% < subordination <= 5%	1.1	1.1	0.8	1.0	
	30% < OLTV<= 60% and subordination > 5%	1.5	1.5	1.1	1.2	
	OLTV > 60% and 0% < subordination <= 5%	1.1	1.1	1.2	1.1	
	OLTV > 60% and subordination > 5%	1.4	1.4	1.5	1.3	
Loan Age	Loan Age <= 24 months		1.0			
	24 months < Loan Age <= 36 months		1.0			
	36 months < Loan Age <= 60 months		0.8			
	Loan Age > 60 months		0.8			
Cohort Burnout	No Burnout		1.0			
	Low		1.2			

	Medium		1.3			
	High		1.4			
Interest-Only (IO)	No IO		1.0	1.0	1.0	
	Yes IO		1.6	1.4	1.1	
Loan Documentation Level	Full Documentation		1.0	1.0	1.0	
	No Documentation or Low Documentation		1.3	1.3	1.2	
Streamlined Refinance	No		1.0	1.0	1.0	
	Yes		1.0	1.2	1.1	
Refreshed Credit Score for RPLs	Refreshed Credit Score < 620			1.6	1.4	
	620 <= Refreshed Credit Score < 640			1.3	1.2	
	640 <= Refreshed Credit Score < 660			1.2	1.1	
	660 <= Refreshed Credit Score < 700			1.0	1.0	
	700 <= Refreshed Credit Score < 720			0.7	0.8	
	720 <= Refreshed Credit Score < 740			0.6	0.7	
	740 <= Refreshed Credit Score < 760			0.5	0.6	
	760 <= Refreshed Credit Score < 780			0.4	0.5	
	Refreshed Credit Score >= 780			0.3	0.4	
Payment change from modification	Payment Change >= 0%				1.1	
	-20% <= Payment Change < 0%				1.0	
	-30% <= Payment Change < -20%				0.9	
	Payment Change < -30%				0.8	
Previous Maximum Delinquency (in the last 36 months)	0-1 Months			1.0	1.0	
	2-3 Months			1.2	1.1	
	4-5 Months			1.3	1.1	
	6+ Months			1.5	1.1	
Refreshed Credit Score for NPLs	Refreshed Credit Score < 580					1.2
	580 <= Refreshed Credit Score < 640					1.1
	640 <= Refreshed Credit Score < 700					1.0
	700 <= Refreshed Credit Score < 720					0.9
	720 <= Refreshed Credit Score < 760					0.8
	760 <= Refreshed Credit Score < 780					0.7
	Refreshed Credit Score >= 780					0.5

Table 14 is structured in the following way: the first column represents secondary risk factors, the second column represents the values or ranges each secondary risk factor

can take, and the third through seventh columns contain proposed risk multipliers, with each column containing proposed risk multipliers pertaining only to the single-family loan segment designated at the top of the column. There would be a different set of risk multipliers for each of the five single-family loan segments.

In the proposed rule, each risk factor could take multiple values, and each value or range of values would have a risk multiplier associated with it. For any particular single-family whole loan or guarantee, each risk multiplier could take a value of 1.0, above 1.0, or below 1.0. A multiplier of 1.0 would imply that the risk factor value for a whole loan or guarantee is similar to, or in a certain range of, the particular risk characteristic found in the segment's synthetic loans. A multiplier value above 1.0 would be assigned to a risk factor value that represents a riskier characteristic than the one found in the segment's synthetic loans, while a multiplier value below 1.0 would be assigned to a risk factor value that represents a less risky characteristic than the one found in the segment's synthetic loans. Finally, the risk multipliers would be multiplicative, so each single-family whole loan and guarantee in a loan segment would receive a risk multiplier for every risk factor pertinent to that loan segment, even if the risk multiplier is 1.0 (implying no change to the base credit risk capital requirement for that risk factor). The total combined risk factor for a single-family whole loan or guarantee would be, in general, the product of all individual risk multipliers pertinent to the appropriate loan segment.

There are two general types of single-family risk factors in the proposed rule for which risk multipliers are applied: risk factors determined at origination and risk factors that change as a loan seasons, or ages.

Risk factors determined at origination include common characteristics such as loan purpose, occupancy type, and property type. The impacts of this type of risk factor on single-family mortgage performance and credit losses are well understood and commonly used in mortgage pricing and underwriting. Many of these risk factors can be quantified and applied in a straightforward manner using risk multipliers as indicated in Table 14. The full set of single-family risk factors determined at origination for which the proposed rule requires risk multipliers is:

- Loan purpose. Loan purpose reflects the reason for the mortgage at origination. The proposed risk multiplier would be at least 1.0 for any purpose other than "purchase," suggesting any other purpose would imply a mortgage that is at least as risky.
- Occupancy type. Occupancy type reflects the borrowers' intended use of the property, with an owner-occupied property representing a baseline level of risk (a multiplier of 1.0), and an investment property being more risky (a multiplier greater than 1.0).
- Property type. Property type describes the physical structure of the property, with a 1-unit property representing a baseline level of risk (a multiplier of 1.0), and other property types such as 2-4 unit properties or manufactured homes being more risky (a multiplier greater than 1.0).
- Number of borrowers. Number of borrowers reflects the number of borrowers on the mortgage note, with multiple borrowers representing a baseline level of risk (a multiplier of 1.0), and one borrower being more risky (a multiplier greater than 1.0).

- Third party origination channel. Third party origination channel reflects the source of the loan, and whether or not it originated from a third party, including a broker or correspondent. Loans that did not originate from a third party represent a baseline level of risk (a multiplier of 1.0).
- Product type. Product type reflects the mortgage product type as of the origination date, with a 30-year fixed rate mortgage and select adjustable rate mortgages (including ARM 5/1 and ARM 7/1, captured in the "Other" category) representing a baseline level of risk (a multiplier of 1.0). Adjustable rate loans with an initial one year fixed rate period followed by a rate that adjusts annually (ARM 1/1) are considered more risky (a multiplier greater than 1.0), while shorter-term fixed rate loans are considered less risky (a multiplier less than 1.0).
- Interest-only. Interest-only reflects whether or not a loan has an interest-only payment feature. Interest-only loans are generally considered more risky (a multiplier greater than 1.0) than non interest-only loans due to their slower principal accumulation and an increased risk of default driven by the potential increase in principal payments at the expiration of the interest-only period. Interest-only loans are not permitted at origination under the Qualified Mortgage rule.
- Loan documentation level. Loan documentation level refers to the level of income documentation used to underwrite the loan. Loans with low or no documentation have a high degree of uncertainty around a borrower's ability to pay, and are considered more risky (a multiplier greater than 1.0) than loans

with full documentation where a lender is able to verify the income, assets, and employment of a borrower. Loans with low or no documentation are not permitted at origination under the Qualified Mortgage rule.

- Streamlined refinance. Streamlined refinance reflects an indicator for a loan that was refinanced through one of the streamlined refinance programs offered by the Enterprises, including HARP. These loans generally cannot be refinanced under normal circumstances due to high MTMLTV, and therefore would be considered more risky (a multiplier greater than 1.0).

Risk factors that change dynamically and are updated as a loan seasons include characteristics such as loan age, loan size, current credit score, and delinquency or modification history. While not important for underwriting or original loan pricing, these risk factors are strongly associated with probability of default and/or loss given default, and are therefore important in estimating capital requirements. The full set of dynamic single-family risk factors for which the proposed rule requires risk multipliers is:

- DTI. DTI, or debt-to-income ratio, is the back-end ratio of the sum of the borrowers' monthly payment for principal, interest, taxes, homeowners' association fees and insurance, plus all fixed debts to the total monthly income of all borrowers as determined at the time of origination. DTI affects and reflects a borrower's ability to make payments on a loan. A DTI between 25 percent and 40 percent would reflect a baseline level of risk (a multiplier of 1.0), and as a borrower's income rises relative to the borrower's debt obligations (a lower DTI), the loan would be considered less risky (a multiplier less than 1.0). If a borrower's income shrinks relative to the

borrower's debt obligations (a higher DTI), the loan would be considered more risky (a multiplier greater than 1.0).

- Loan size. Loan size reflects the current unpaid principal balance of a loan. Loans with a low unpaid principal balance would be considered more risky than loans with a high unpaid principal balance due to the fact that fixed foreclosure costs represent a higher percentage of the unpaid principal balance for loans with a low unpaid principal balance. As a result, loans with a low balance would require higher capital in basis points than an otherwise identical loan with a high balance. Consequently, loans with an unpaid principal balance under $100,000 would receive a multiplier greater than 1.0.
- Subordination (OLTV x second lien). Subordination refers to the ratio of the original loan amount of the second lien to the lesser of the appraised value of a loan or the sale price. Loans with no subordination would represent a baseline level of risk (a multiplier of 1.0), whereas loans with varying combinations of original loan-to-value (OLTV) and subordination percentages would be generally considered more risky (a multiplier greater than 1.0).
- Loan age. Loan age reflects the number of months since the loan was originated. In the proposed rule, older loans are considered less risky because in general as loans age the likelihood of events occurring that would trigger mortgage default decreases. Older loans have relatively low potential cumulative losses remaining, and would require lower credit risk capital requirements than newer loans.

- Cohort burnout. Cohort burnout reflects the number of times a borrower has not taken advantage of the opportunity to refinance the mortgage when the borrower's mortgage rate exceeds the current mortgage rate by 50 basis points. When a borrower refinances a mortgage, the lender's credit risk decreases because the loan is repaid. Cohort burnout is an indicator that a borrower is less likely to refinance in the future given the opportunity to do so. Borrowers that demonstrate a lower propensity to refinance thus have higher credit risk, and a loan with a cohort burnout greater than zero would receive a multiplier greater than 1.0.
- Refreshed credit score for re-performing loans (RPLs) and non-performing loans (NPLs). Refreshed credit scores refer to credit scores that have been updated as of the capital calculation date. In general, a credit score reflects the credit worthiness of a borrower, and a higher credit score implies lower risk and a lower multiplier. For RPLs, a refreshed credit score between 660 and 700 reflects a baseline level of risk (a multiplier of 1.0). For NPLs, a refreshed credit score between 640 and 700 represents a baseline level of risk (a multiplier of 1.0).
- Payment change from modification. For modified loans, the payment change from modification reflects the change in the monthly payment, as a percentage of the original monthly payment, resulting from a permanent loan modification. In general, higher payment reductions tend to reduce the likelihood of future default, so loans with higher payment reductions from

modifications would have a lower capital requirement (a multiplier less than 1.0).

- Previous maximum delinquency. For RPLs, previous maximum delinquency reflects the maximum number of months a loan has been at least 30-days delinquent during the prior three years. The longer a loan has been delinquent, the more likely it will default in the future, and the more risky it is considered. Therefore, loans with a previous maximum delinquency between 0 and 1 month represent a baseline level of risk (a multiplier of 1.0), and loans with a maximum delinquency greater than 1 month would be considered more risky (a multiplier greater than 1.0).

Not all risk multipliers would apply to every loan segment, because the multipliers were estimated separately for each single-family loan segment. In cases where a risk factor did not influence the estimated credit risk of whole loans and guarantees in a loan segment, or a risk factor did not apply at all (refreshed credit scores in the new origination segment, for example), there would be no multiplier for that risk factor in that loan segment.

In the proposed rule, single-family risk multipliers would adjust base credit risk capital requirements in a multiplicative manner. Consequently, and as a result of the simple and straightforward structure of the proposed multiplier framework, certain combinations of risk factors may result in over-capitalizing certain types of single-family whole loans and guarantees. This could occur in part because the risk factors for which multipliers would be applied are not independent. Single-family whole loans and guarantees with a MTMLTV greater than 95 percent were particularly vulnerable to this

phenomenon. Thus, the proposed rule would implement a multiplier cap of 3.0 for the product of risk multipliers for single-family whole loans and guarantees with a MTMLTV greater than 95 percent. Based on FHFA empirical analysis, less than 3 percent of loans with a MTMLTV greater than 95 percent would be affected by the cap.

Net Credit Risk Capital Requirements: Loan-level Credit Enhancements

Loan-level credit enhancements are credit guarantees on individual loans. The Enterprises primarily use loan-level credit enhancements to satisfy the credit enhancement requirement of their charter acts. The Enterprises' charter acts require single-family mortgage loans with an unpaid principal balance exceeding 80 percent of the value of the property to have one of three forms of credit enhancement. The credit enhancement requirement can be satisfied through: the seller retaining a participation of at least 10 percent in the mortgage (participation agreement); the seller agreeing to repurchase or replace the mortgage in the event the mortgage is in default (repurchase or replacement agreements; recourse and indemnification agreements); or a guarantee or insurance on the unpaid principal balance which is in excess of 80 percent LTV (guarantee or insurance). The third form, mortgage insurance, is the most common form of charter-required credit enhancement.

The proposed rule would require the Enterprises to calculate net credit risk capital requirements by reducing the gross credit risk capital requirement on single-family loans to reflect the benefits from loan-level credit enhancements. Similar to the use of multipliers to adjust the base credit risk capital requirement for various risk factors, the proposed rule would use multipliers ("CE multipliers") to reduce the gross credit risk capital requirement for the benefit from loan-level credit enhancements. CE multipliers

would take values of less than or equal to 1.0 to reflect a reduction in the gross credit risk capital requirement. For example, a CE multiplier of 0.65 on a single-family loan would imply that an Enterprise is responsible for 65 percent of the credit risk of the loan and that the counterparty providing the credit enhancement is responsible for the remaining 35 percent of the credit risk. A higher CE multiplier would imply an Enterprise is taking a greater share of the losses and a lower CE multiplier would imply the counterparty is taking a greater share of the losses.

Participation Agreements

Participation agreements are rarely utilized by the Enterprises and for reasons of simplicity, the proposed rule would not assign any benefit for these agreements (a CE multiplier of 1.0).

Repurchase, Replacement, Recourse, and Indemnification Agreements

Repurchase, replacement, recourse, and indemnification agreements may be unlimited or limited. Unlimited agreements provide full coverage for the life of the loan, while limited agreements provide partial coverage or have a limited duration. In the proposed rule, a counterparty would be responsible for all credit risk in the presence of an unlimited agreement, and the loan would be assigned a CE multiplier of zero. For limited agreements, the proposed rule would require the Enterprises to use the single-family CRT techniques described section II.C.4.b to determine the appropriate benefit from the limited agreement.

Mortgage Insurance

Mortgage insurance (MI) is an insurance policy where an insurance company covers a portion of the loss if a borrower defaults on a single-family mortgage loan. In the proposed rule, the benefit from MI would vary based on a number of MI coverage and loan characteristics, including (i) whether MI is cancellable or non-cancellable, (ii) whether MI is charter-coverage or guide-coverage, and (iii) loan characteristics, including original LTV, loan age, amortization term, and loan performance segment.

- Non-cancellable versus cancellable MI. Non-cancellable MI provides coverage for the life of the loan. Non-cancellable MI is typically associated with single premium insurance policies. Cancellable MI allows for the cancellation of coverage upon a borrower's request, when the loan balance falls to 80 percent of the original property value, or automatic cancellation when the loan balance falls below 78 percent of the original property value or the loan reaches the midpoint of the loan's amortization schedule, if the mortgage is current. Due to the longer period of coverage, non-cancellable MI provides more credit risk protection than cancellable MI. In the proposed rule, non-cancellable MI CE multipliers would be lower than cancellable MI CE multipliers. The proposed rule would provide separate sets of multipliers for non-cancellable and cancellable MI to reflect this difference in risk protection.
- Charter-level versus guide-level MI coverage. Charter-level coverage provides the minimum level of coverage required by the Enterprises' charter acts for loans with LTVs greater than 80 percent. Guide-level coverage provides deeper coverage, roughly double the coverage provided by charter-

level coverage. Guide-level coverage implies greater credit risk protection from the MIs. Therefore, in the proposed rule, the CE multipliers for guide-level coverage would be lower than the CE multipliers for charter-level coverage to reflect the Enterprises having a lower share of the credit risk.

- Original LTV. Loans with higher original LTV require higher MI coverage levels than loans with lower original LTV. Higher MI coverage levels imply greater credit risk protection from the MIs. Therefore, in the proposed rule, loans with higher original LTVs would have lower CE multipliers.
- Amortization term. For cancellable MI, loans with a 15- to 20-year amortization period will have MI cancellation triggered earlier than loans with a 30-year amortization period. Therefore, loans with longer amortization terms have a longer period of credit risk protection from MIs and the Enterprises have a lower share of the risk. In the proposed rule, loans with a 30-year amortization period would have a lower CE multiplier than loans with a 15- to 20-year amortization period for loans with cancellable MI.
- Loan segment. MI coverage on delinquent loans cannot be cancelled. Cancellation of MI coverage on modified performing loans is based on the modified LTV and the modified amortization term, which are typically higher than the original LTV and the original amortization term. In both of these cases, the MI coverage is extended for a longer period, resulting in greater credit risk protection, relative to performing loans. Therefore, in the proposed rule, delinquent and modified loans would have a lower CE multiplier than performing loans.

- Loan age. MI cancellation will be triggered sooner for older loans than for younger loans because the older loans will reach an amortized LTV of 78 percent or the mid-point of the loan's amortization period first. Therefore, older loans with cancellable MI have a shorter period of remaining MI coverage and thus have less credit risk protection from MI. In the proposed rule, older loans with cancellable MI would have a higher CE multiplier than would younger loans.

The proposed rule would use the following set of tables to present the CE multipliers for loans with MI. These tables take into consideration the MI factors that were discussed above.

The first table contains proposed CE multipliers for non-cancellable MI coverage. This table would be used for all loan segments, except the NPL loan segment. The table differentiates multipliers by type of coverage (charter and guide), original LTV, amortization term, and coverage percent.

Table 15: CE Multipliers for New Originations, Performing Seasoned Loans, and RPLs when MI is Non-Cancellable

Product/Coverage Type	Coverage Category	CE Multiplier
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.846
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.701
	90% < OLTV <= 95% and MI Coverage Percent = 25%	0.408
	95% < OLTV <= 97% and MI Coverage Percent = 35%	0.226
	OLTV > 97% and MI Coverage Percent = 35%	0.184
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 12%	0.706
	85% < OLTV <= 90% and MI Coverage Percent = 25%	0.407
	90% < OLTV <= 95% and MI Coverage Percent = 30%	0.312
	95% < OLTV <= 97% and MI Coverage Percent = 35%	0.230
	OLTV > 97% and MI Coverage Percent = 35%	0.188
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.846
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.701
	90% < OLTV <= 95% and MI Coverage Percent = 16%	0.612
	95% < OLTV <= 97% and MI Coverage Percent = 18%	0.570
	OLTV > 97% and MI Coverage Percent = 20%	0.535
30 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.850
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.713
	90% < OLTV <= 95% and MI Coverage Percent = 16%	0.627
	95% < OLTV <= 97% and MI Coverage Percent = 18%	0.590
	OLTV > 97% and MI Coverage Percent = 20%	0.558

The proposed rule would have three tables for cancellable MI. The first cancellable MI table contains proposed CE multipliers for the new originations loan segment, the performing seasoned loans segment, and the non-modified RPL loan segment. The table differentiates multipliers by type of coverage (charter-level and guide-level), original LTV, coverage percent, amortization term, and loan age.

Table 16: CE Multipliers for New Originations, Performing Seasoned, and Non-Modified RPLs when MI is Cancellable

		Loan Age (months)											
		Loan Age <= 5	5 < Loan Age <= 12	12 < Loan Age <= 24	24 < Loan Age <= 36	36 < Loan Age <= 48	48 < Loan Age <= 60	60 < Loan Age <= 72	72 < Loan Age <= 84	84 < Loan Age <= 96	96 < Loan Age <=108	108 < Loan Age <=120	Loan Age >120
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.988	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 25%	0.826	0.853	0.912	0.973	0.996	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.732	0.765	0.848	0.936	0.986	0.998	1.000	1.000	1.000	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 35%	0.630	0.673	0.762	0.865	0.945	0.980	0.996	1.000	1.000	1.000	1.000	1.000
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 12%	0.867	0.884	0.928	0.962	0.994	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 25%	0.551	0.584	0.627	0.679	0.785	0.893	0.950	0.986	0.998	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 30%	0.412	0.440	0.456	0.484	0.547	0.654	0.743	0.845	0.932	0.969	0.992	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.322	0.351	0.369	0.391	0.449	0.535	0.631	0.746	0.873	0.925	0.965	1.000
	OLTV > 97% and MI Coverage = 35%	0.272	0.295	0.314	0.353	0.410	0.462	0.515	0.607	0.756	0.826	0.887	1.000
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.988	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.887	0.904	0.943	0.983	0.997	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.854	0.874	0.918	0.966	0.992	0.999	1.000	1.000	1.000	1.000	1.000	1.000

		Loan Age (months)											
		Loan Age <= 5	5 < Loan Age <= 12	12 < Loan Age <= 24	24 < Loan Age <= 36	36 < Loan Age <= 48	48 < Loan Age <= 60	60 < Loan Age <= 72	72 < Loan Age <= 84	84 < Loan Age <= 96	96 < Loan Age <=108	108 < Loan Age <=120	Loan Age >120
	OLTV > 97% and MI Coverage = 20%	0.788	0.810	0.859	0.922	0.969	0.989	0.998	1.000	1.000	1.000	1.000	1.000
30 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.934	0.943	0.964	0.981	0.997	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.780	0.795	0.819	0.845	0.896	0.948	0.976	0.993	0.999	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.679	0.690	0.703	0.719	0.755	0.813	0.861	0.916	0.963	0.983	0.995	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.642	0.652	0.662	0.676	0.708	0.756	0.806	0.866	0.933	0.960	0.981	1.000
	OLTV > 97% and MI Coverage = 20%	0.597	0.607	0.617	0.629	0.658	0.686	0.715	0.765	0.845	0.882	0.914	1.000

The second cancellable MI table contains proposed CE multipliers for the modified RPL loan segment for loans with 30-year post-modification amortization. The table differentiates multipliers by type of coverage (charter and guide), original LTV, coverage percent, amortization term, and loan age.

Table 17: CE Multipliers for Modified RPLs with 30-Year Post-Mod Amortization when MI is Cancellable

		Months (Mths) Since Last Modification											
		Mths <= 5	5 < Mths <= 12	12 < Mths <= 24	24 < Mths <= 36	36 < Mths <= 48	48 < Mths <= 60	60 < Mths <= 72	72 < Mths <= 84	84 < Mths <= 96	96 < Mths <=108	108 < Mths <= 120	Mths >120
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.988	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 25%	0.826	0.853	0.912	0.973	0.996	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.732	0.765	0.848	0.936	0.986	0.998	1.000	1.000	1.000	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 35%	0.630	0.673	0.762	0.865	0.945	0.980	0.996	1.000	1.000	1.000	1.000	1.000
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 12%	0.867	0.906	0.978	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 25%	0.551	0.568	0.653	0.839	0.968	0.992	0.998	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 30%	0.412	0.426	0.470	0.601	0.794	0.889	0.951	0.981	0.992	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.322	0.337	0.380	0.492	0.689	0.810	0.899	0.945	0.965	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 35%	0.272	0.284	0.334	0.436	0.561	0.682	0.791	0.857	0.887	1.000	1.000	1.000
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.988	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.887	0.904	0.943	0.983	0.997	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.854	0.874	0.918	0.966	0.992	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 20%	0.788	0.810	0.859	0.922	0.969	0.989	0.998	1.000	1.000	1.000	1.000	1.000
30 Year Amortizing	80% < OLTV <= 85% and MI Coverage = 6%	0.934	0.954	0.989	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

		Months (Mths) Since Last Modification											
		Mths <= 5	5 < Mths <= 12	12 < Mths <= 24	24 < Mths <= 36	36 < Mths <= 48	48 < Mths <= 60	60 < Mths <= 72	72 < Mths <= 84	84 < Mths <= 96	96 < Mths <=108	108 < Mths <= 120	Mths >120
Loan with Charter-level Coverage	85% < OLTV <= 90% and MI Coverage = 12%	0.780	0.788	0.832	0.922	0.985	0.996	0.999	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.679	0.685	0.711	0.784	0.889	0.940	0.973	0.989	0.995	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.642	0.647	0.669	0.732	0.836	0.900	0.947	0.971	0.981	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 20%	0.597	0.602	0.623	0.672	0.740	0.805	0.864	0.898	0.914	1.000	1.000	1.000

The third cancellable MI table contains proposed CE multipliers for the modified RPL loan segment for loans with 40-year post-modification amortization. The table differentiates multipliers by type of coverage (charter-level and guide-level), original LTV, coverage percent, and loan age.

Table 18: CE Multipliers for Modified RPLs with 40-Year Post-Mod Amortization when MI is Cancellable

		Months (Mths) Since Last Modification											
		Mths <= 5	5 < Mths <= 12	12 < Mths <= 24	24 < Mths <= 36	36 < Mths <= 48	48 < Mths <= 60	60 < Mths <= 72	72 < Mths <= 84	84 < Mths <= 96	96 < Mths <=108	108 < Mths <=120	Mths >120
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	0.999	0.999	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.971	0.971	0.980	0.988	0.994	0.999	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 25%	0.826	0.853	0.853	0.853	0.883	0.912	0.943	0.973	0.996	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.732	0.765	0.765	0.765	0.807	0.848	0.892	0.936	0.986	0.998	1.000	1.000
	OLTV > 97% and MI Coverage = 35%	0.630	0.673	0.673	0.673	0.718	0.762	0.814	0.865	0.945	0.980	0.996	1.000
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 12%	0.867	0.884	0.928	0.962	0.994	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 25%	0.551	0.584	0.627	0.679	0.785	0.893	0.950	0.986	0.998	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 30%	0.412	0.440	0.456	0.484	0.547	0.654	0.743	0.845	0.932	0.969	0.992	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.322	0.351	0.369	0.391	0.449	0.535	0.631	0.746	0.873	0.925	0.965	1.000
	OLTV > 97% and MI Coverage = 35%	0.272	0.295	0.314	0.353	0.410	0.462	0.515	0.607	0.756	0.826	0.887	1.000
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	0.998	0.999	0.998	0.998	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.971	0.971	0.980	0.988	0.994	0.999	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.887	0.904	0.904	0.904	0.924	0.943	0.963	0.983	0.997	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.854	0.874	0.874	0.874	0.896	0.918	0.942	0.966	0.992	0.999	1.000	1.000
	OLTV > 97% and MI Coverage = 20%	0.788	0.810	0.810	0.810	0.835	0.859	0.891	0.922	0.969	0.989	0.998	1.000
30 Year Amortizing	80% < OLTV <= 85% and MI Coverage = 6%	0.934	0.943	0.964	0.981	0.997	0.999	1.000	1.000	1.000	1.000	1.000	1.000

		Months (Mths) Since Last Modification											
		Mths <= 5	5 < Mths <= 12	12 < Mths <= 24	24 < Mths <= 36	36 < Mths <= 48	48 < Mths <= 60	60 < Mths <= 72	72 < Mths <= 84	84 < Mths <= 96	96 < Mths <=108	108 < Mths <=120	Mths >120
Loan with Charter-level Coverage	85% < OLTV <= 90% and MI Coverage = 12%	0.780	0.795	0.819	0.845	0.896	0.948	0.976	0.993	0.999	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.679	0.690	0.703	0.719	0.755	0.813	0.861	0.916	0.963	0.983	0.995	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.642	0.652	0.662	0.676	0.708	0.756	0.806	0.866	0.933	0.960	0.981	1.000
	OLTV > 97% and MI Coverage = 20%	0.597	0.607	0.617	0.629	0.658	0.686	0.715	0.765	0.845	0.882	0.914	1.000

The final MI table contains proposed CE multipliers for the NPL loan segment. MI on delinquent loans cannot be cancelled; therefore, there is no differentiation between cancellable and non-cancellable MI for the NPL loan segment. The table differentiates multipliers by type of coverage (charter-level and guide-level), original LTV, amortization term, and coverage percent.

Table 19: CE Multipliers for NPLs

		CE Multiplier
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.893
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.803
	90% < OLTV <= 95% and MI Coverage Percent = 25%	0.597
	95% < OLTV <= 97% and MI Coverage Percent = 35%	0.478
	OLTV > 97% and MI Coverage Percent = 35%	0.461
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 12%	0.813
	85% < OLTV <= 90% and MI Coverage Percent = 25%	0.618
	90% < OLTV <= 95% and MI Coverage Percent = 30%	0.530
	95% < OLTV <= 97% and MI Coverage Percent = 35%	0.490
	OLTV > 97% and MI Coverage Percent = 35%	0.505
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.893
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.803
	90% < OLTV <= 95% and MI Coverage Percent = 16%	0.775
	95% < OLTV <= 97% and MI Coverage Percent = 18%	0.678
	OLTV > 97% and MI Coverage Percent = 20%	0.663
30 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.902
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.835
	90% < OLTV <= 95% and MI Coverage Percent = 16%	0.787
	95% < OLTV <= 97% and MI Coverage Percent = 18%	0.765
	OLTV > 97% and MI Coverage Percent = 20%	0.760

The proposed CE multipliers reflect the average of the Enterprises' estimates. The Enterprises, however, would not necessarily apply the CE multipliers in isolation, but would first adjust the multipliers to account for the probability that a counterparty may not fully meet its payment obligations. The following section describes the proposed approach for adjusting CE multipliers for counterparty risk.

Counterparty Credit Risk

Sharing loss with counterparties exposes the Enterprises to counterparty credit risk. To account for this exposure, the proposed rule would reduce the recognized benefits from credit enhancements to incorporate the risk that counterparties are unable to meet claim obligations. For this reason, the proposed rule would establish a counterparty haircut multiplier (CP multiplier) to the CE benefit. The CP haircut multiplier would take values from zero to one. A value of zero, the smallest haircut, would imply a counterparty will fully meet its claim obligations, while a value of one, the largest haircut, would imply a counterparty will not meet its claim obligations. A value between zero and one would imply a counterparty will meet a portion of its claim obligations.

The CP haircut multiplier would depend on a number of factors that reflect counterparty credit risk. The two main factors are the creditworthiness of the counterparty and the counterparty's level of concentration in mortgage credit risk. The proposed rule would require the Enterprises to assign a counterparty rating using the rating scheme provided in Table 20. In assigning a rating, the Enterprises would assign the counterparty rating that most closely aligns to the assessment of the counterparty from its internal counterparty risk framework. Similarly, the proposed rule would require the Enterprises to utilize their counterparty risk management frameworks to assign each counterparty a rating of "not high" or "high" to reflect the counterparty's concentration in mortgage credit risk.

Table 20: Counterparty Financial Strength Ratings

Counterparty Rating	Description
1	The counterparty is exceptionally strong financially. The counterparty is expected to meet its obligations under foreseeable adverse events.
2	The counterparty is very strong financially. There is negligible risk the counterparty may not be able to meet all of its obligations under foreseeable adverse events.
3	The counterparty is strong financially. There is a slight risk the counterparty may not be able to meet all of its obligations under foreseeable adverse events.
4	The counterparty is financially adequate. Foreseeable adverse events will have a greater impact on '4' rated counterparties than higher rated counterparties.
5	The counterparty is financially questionable. The counterparty may not meet its obligations under foreseeable adverse events.
6	The counterparty is financially weak. The counterparty is not expected to meet its obligations under foreseeable adverse events.
7	The counterparty is financially extremely weak. The counterparty's ability to meet its obligations is questionable.
8	The counterparty is in default on an obligation or is under regulatory supervision.

During the most recent financial crisis, three out of seven mortgage insurance companies were placed in run-off by their state regulators, and payments on the Enterprises' claims were deferred by the state regulators. This posed a serious counterparty risk and financial losses for the Enterprises. More generally, the crisis highlighted that counterparty risk can be amplified when the counterparty's credit exposure is highly correlated with the Enterprises' credit exposure. This amplification of counterparty risk due to the correlation between counterparties' credit exposures is referred to as wrong-way risk. Counterparties whose main lines of business are highly concentrated in mortgage credit risk have a higher probability to default on payment obligations when the mortgage default rate is high. Therefore, counterparties with higher levels of mortgage credit risk concentration have higher counterparty risk relative to

diversified counterparties. The proposed rule would assign larger haircuts to counterparties with higher levels of mortgage credit risk concentration relative to diversified counterparties. The Enterprises would assess the level of mortgage risk concentration for each individual counterparty to determine whether the insurer is well diversified or whether it has a high concentration risk.

To calculate the CP haircut, the proposed rule would use a modified version of the Basel Advanced Internal Ratings Based (IRB) approach. The modified version leverages the IRB approach to account for the creditworthiness of the counterparty but makes changes to reflect the level of mortgage credit risk concentration. The Basel IRB framework provides the ability to differentiate haircuts between counterparties with different levels of risk. The proposed rule would augment the IRB approach to capture risk across counterparties. In this way, the proposed adjustment would help capture wrong-way risk between the Enterprises and their counterparties.

In particular, the proposed approach calculates the counterparty haircut by multiplying stress loss given default by the probability of default and a maturity adjustment for the asset:

$$CP\ Haircut = LGD_{stress} * PD_{stress} * MA$$

where LGD_{stress} denotes stress loss given default, PD_{stress} is stress default probability, and *MA* is maturity adjustment. *MA* is calculated as follows:

$$MA = \left(\frac{1+(M-2.5)*b}{1-1.5*b}\right),$$
where
$$b = [0.11852 - 0.05478 * \ln(PD)]^2.$$

PD_{stress} is a function of expected probability of default *PD*, asset value correlation ρ, and an asset value correlation multiplier (*AVCM*). PD_{stress} is calculated as follows:

$$PD_{stress} = \left[N\left(\left(\frac{1}{\sqrt{1-AVCM*\rho}}\right) * G(PD) - \left(\sqrt{\frac{AVCM*\rho}{1-AVCM*\rho}}\right) * G(SCI)\right)\right],$$

$$\rho = \left[0.12 * \left(\frac{1-\exp(-50*PD)}{1-\exp(-50)}\right) + 0.24 * \left(1 - \frac{1-\exp(-50*PD)}{1-\exp(-50)}\right)\right]$$

where *SCI* is supervisory confidence interval, N(.) is the standard normal distribution, and G(.) is the inverse standard normal distribution.

The following table highlights the parameterization of the proposed approach.

Table 21: Parameterization of the Single-Family Counterparty Haircut Multipliers

Parameters	**Proposed Values**
LGD_{Stress}	45%
SCI	99.9%
Correlation function (ρ)	Basel (PD)
AVCM for High level of Mortgage Concentration Risk	175%
AVCM for Not High level of Mortgage Concentration Risk	125%
Maturity 30yr (M)	5
Maturity 15/20yr (M)	3.5
NPL Maturity (M)	1.5

From the parameters table, stress loss given default (LGD) is calibrated to 45 percent according to the historic average stress severity rates. The maturity adjustment is calibrated to 5 years for 30-year products and to 3.5 years for 15- to 20- year products to approximately reflect the average life of the assets. The expected probability of default (PD) is calculated using a historical 1-year PD matrix for all financial institutions.

As mentioned earlier, counterparties with a lower concentration of mortgage credit risk and therefore a lower potential for wrong-way risk would be afforded a lower haircut relative to the counterparties with higher concentrations of mortgage credit risk. This difference is captured through the asset valuation correlation multiplier, AVCM. An AVCM of 1.75 is assigned to counterparties with high exposure to mortgage credit risk

and 1.25 is assigned to diversified counterparties. The parameters of the Basel IRB formula, including the AVCM, were augmented to best fit the internal counterparty credit risk haircuts developed by the Enterprises. This method of accounting for wrong-way risk is transparent and parsimonious.

The NPL loan segment represents a different level of counterparty risk relative to the performing loans segment. Unlike performing loans, the Enterprises expect to submit claims for non-preforming loans in the near future. The proposed rule would reduce Basel's effective maturity from 5 (or 3.5 for 15/20Yr) to 1.5 for all loans in the NPL loan segment. The reduced effective maturity would lower counterparty haircuts on loans in the NPL loan segment.

The proposed rule would use the following look-up table to determine the counterparty risk haircut multiplier.

Table 22: Single-Family Counterparty Risk Haircut (CP Haircut) Multipliers by Rating, Mortgage Concentration Risk, Segment, and Product

	CP Haircut					
	Mortgage Concentration Risk: Not High			Mortgage Concentration Risk: High		
	New Originations, Performing Seasoned, and Re-Performing Loans		Non-Performing Loans	New Originations, Performing Seasoned, and Re-Performing Loans		Non-Performing Loans
Counterparty Rating	30 Yr Product	20/15 Yr Product		30 Yr Product	20/15 Yr Product	
1	1.8%	1.3%	0.6%	2.8%	2.0%	0.9%
2	4.5%	3.5%	2.0%	7.3%	5.6%	3.2%
3	5.2%	4.0%	2.4%	8.3%	6.4%	3.9%
4	11.4%	9.5%	6.9%	17.2%	14.3%	10.4%
5	14.8%	12.7%	9.9%	20.9%	18.0%	14.0%
6	21.2%	19.1%	16.4%	26.8%	24.2%	20.8%
7	40.0%	38.2%	35.7%	43.7%	41.7%	39.0%
8	47.6%	46.6%	45.3%	47.6%	46.6%	45.3%

Net Credit Risk Capital Requirement for Single-Family Whole Loans and Guarantees

The proposed rule would use the following formula to calculate the net credit risk capital requirement for single-family whole loans and guarantees with loan-level credit enhancement, taking into account the credit enhancement benefit adjusted for the counterparty haircut:

Net Credit Risk Capital = Gross Credit Risk Capital *(1-(1-CE Multiplier)*(1-CP Haircut Multiplier)).

For single-family whole loans and guarantees without loan-level credit enhancements, the net credit risk capital requirement would equal the gross credit risk capital requirement.

Question 6: FHFA is soliciting comments on the proposed framework for calculating credit risk capital requirements for single-family whole loans and guarantees, including the loan segments, base grids, and risk multipliers. What modifications should FHFA consider and why?

Question 7: FHFA is soliciting comments on the proposed use of separate single-family credit risk capital grids for new originations and performing seasoned loans. The proposed new originations grid has a unique requirement for loans with an OLTV of 80 percent due to the volume of such loans, but this could lead to increases in capital requirements for loans originated with an OLTV between 75 percent and 80 percent when those loans season. Should FHFA consider combining the single-family new originations and performing seasoned loan grids? What other modifications should FHFA consider and why?

Enterprise- and Ginnie Mae-Guaranteed Single-Family Mortgage-Backed Securities

There is no credit risk capital requirement in the proposed rule for single-family mortgage-backed securities (MBS) held in portfolio that were issued and guaranteed by an Enterprise or Ginnie Mae, and collateralized mortgage obligations (CMOs) held in portfolio that are collateralized by Enterprise or Ginnie Mae whole loans or securities. Ginnie Mae securities are backed by the U.S. government and therefore do not have credit risk. For MBS and CMOs issued by an Enterprise and later purchased by the same Enterprise for its portfolio, the credit risk is already reflected in the credit risk capital requirement on the underlying single-family whole loans and guarantees (section II.C.4.a). For MBS and CMOs held by an Enterprise that were issued by the other Enterprise, there is counterparty risk. However, these holdings are typically small and, for reasons of simplicity, the proposed rule does not include a capital requirement for this exposure.

Question 8: Should single-family MBS and CMOs held by an Enterprise that were issued by the other Enterprise be subject to a counterparty haircut to reflect counterparty risk?

b. Credit Risk Transfer

This section corresponds to Proposed Rule §§ 1240.14 through 1240.16

Overview

The Enterprises systematically reduce the credit risk on their single-family books of business by transferring and sharing risk beyond loan-level credit enhancements through single-family credit risk transfers (CRTs). These CRTs include capital markets and insurance/reinsurance transactions, among others. In the proposed rule, single-family capital relief for the Enterprises would be equal to the reduction in credit risk capital from

transferring all or part of a credit risk exposure that remains after considering loan-level credit enhancements. For a given single-family CRT, the proposed rule would restrict capital relief to be no greater than total net credit risk capital requirements on all single-family whole loans and guarantees underlying the CRT (or belonging to the reference pool underlying the CRT). Therefore, the single-family operational risk capital requirement and the single-family going-concern buffer would not contribute to capital relief.

The proposed rule would require the Enterprises to calculate capital relief on every CRT. If a CRT has multiple pool groups, the requirement would apply separately to each pool group. The proposed rule would then require each Enterprise to calculate total capital relief as the sum of capital relief across all its CRTs, including across all pool groups.

This section provides (i) a background on single-family CRTs, (ii) types of single-family CRTs offered by the Enterprises, (iii) the proposed rule's approach for CRT capital relief, (iv) alternative approaches considered, and (v) estimated effects of the proposed rule's approach.

Background

CRT transactions provide credit protection beyond that provided by loan-level credit enhancements. CRTs can be viewed as the Enterprise paying a portion of the guarantee fee as a cost of transferring credit risk to private sector investors. To date, single-family CRTs have been focused on transferring expected and unexpected credit risk. This amounts to the Enterprises obtaining the equivalent of insurance to cover their potential credit losses. The proposed rule proposes an approach to measuring capital

relief on CRT transactions from the transfer of unexpected losses while also accounting for potential counterparty credit risks where appropriate.

Types of Single-Family CRTs

The Enterprises have developed a variety of single-family CRTs. The types of transactions include structured debt issuances known as Structured Agency Credit Risk (STACR) for Freddie Mac and Connecticut Avenue Securities (CAS) for Fannie Mae, insurance/reinsurance transactions, front-end lender risk sharing transactions, and senior-subordinate securities.

Enterprise Debt Issuance

The STACR and CAS securities account for the majority of single-family CRTs to date. These securities are issued as Enterprise debt and do not constitute the sale of mortgage loans or their cash flows. Instead, STACR and CAS are considered to be synthetic notes or derivatives because their cash flows track to the credit risk performance of a notional reference pool of mortgage loans. For the STACR and CAS transactions, the Enterprises receive the proceeds of the note issuance at the time of sale to investors. The Enterprises pay interest to investors on a monthly basis and allocate principal to investors based on the repayment and credit performance of the loans in the underlying reference pool. Investors ultimately receive a return of their principal, less any covered credit losses. The debt transactions are fully collateralized since investors pay for the notes in full. Thus, the Enterprises do not bear any counterparty credit risk on debt transactions.

Insurance or Reinsurance

Insurance or reinsurance transactions that are over and above loan-level mortgage insurance are considered CRTs. To date, the insurance and reinsurance CRTs have focused primarily on pool-level insurance transactions. In contrast to loan-level insurance structures such as MI, pool-level insurance covers an entire pool of hundreds or thousands of loans. Pool insurance transactions are typically structured with an aggregated loss amount. The Enterprises, as policy holders, typically retain some portion (or all) of the first loss. The cost of pool-level insurance is generally paid by the Enterprise, not the lender or borrower. In general, because the insurance transactions are partly collateralized the Enterprises may bear some counterparty credit risk.

Reinsurance companies have been the primary provider of pool-level insurance for the Enterprises' CRTs.[39] Fannie Mae's reinsurance risk transfer transactions are known as Credit Insurance Risk Transfer (CIRT), and Freddie Mac's reinsurance transactions are known as Agency Credit Insurance Structure (ACIS). One advantage of conducting transactions with reinsurers is that they are generally diversified in their risk exposures. This may result in lower counterparty risk because their books of business risk should be less correlated with the Enterprise's book of business risk and thus may be better able to withstand a home price stress cycle than a monoline mortgage insurer. The Enterprises further reduce counterparty risk in pool-level transactions through collateral requirements.

Front-End Lender Risk Sharing Transactions

[39] Many reinsurance companies do not wish to be or are not licensed to write polices directly to non-insurance companies, such as the Enterprises. Thus, although it is the reinsurance company that ultimately provides all of the risk capital, if the reinsurer is not writing the policy directly to the Enterprise, an insurance company must stand in the middle of the transaction. In many cases, this insurance company is a "protected cell," that is, a vehicle established to write insurance policies solely for the insured and to transfer that risk to reinsurers. The cell is used exclusively for Enterprise CRT purposes. The protected cell acts purely as a pass-through entity and takes no credit risk itself.

Front-end (or upfront) lender risk sharing transactions include various methods of CRT where an originating lender or aggregator retains a portion of the credit risk associated with the loans that they sell to or service for the Enterprises. In this case, the credit risk sharing arrangement is entered into prior to the lender delivering the loans to the Enterprise. In exchange, the lender is compensated for the risk. In these transactions, the Enterprises bear some counterparty credit risk. However, the Enterprise typically requires some form of collateral or other arrangement to offset the counterparty risk inherent in the front-end transaction. Front-end lender risk sharing transactions are generally described as lender recourse or indemnification arrangements, or collateralized recourse. One benefit of the lender recourse or indemnification structure in which the credit risk is retained by the lender is that it aligns the interest of the lender and servicer with the credit risk purchaser and the Enterprise.

Senior-Subordinate Securitization

In a senior-subordinate (senior-sub) securitization, the Enterprise sells a pool of mortgages to a trust that securitizes cash flows from the pool into several tranches of bonds, similar to private label security transactions. A tranche refers to all securitization exposures associated with a securitization that have the same seniority. The subordinated bonds, also called mezzanine and first-loss bonds, provide the credit protection for the senior bond. Unlike STACR and CAS, the bonds created in a senior-sub transaction are mortgage-backed securities, not synthetic securities. In addition, unlike typical MBS issued by the Enterprises, only the senior tranche is credit-guaranteed by the Enterprise.

Proposed Approach for Single-Family CRT Capital Relief

The proposed rule would require that the Enterprises calculate capital relief using a step-by-step approach. To identify capital relief, the proposed rule would combine credit risk capital and expected losses on the underlying single-family whole loans and guarantees, tranche structure, ownership, timing of coverage, and counterparty credit risk. In general, the proposed rule would require five steps when calculating capital relief.

In the first step, the Enterprises would distribute credit risk capital on the underlying single-family whole loans and guarantees to the tranches of the CRT independent of tranche ownership, while controlling for expected losses, such that the riskiest, most junior tranches would be allocated capital before the most senior tranches. Under the proposed approach, an Enterprise would hold the same level of capital if the Enterprise held every tranche of its risk transfer vehicle or held the underlying assets in portfolio. The total credit risk capital across all tranches of the CRT would equal credit risk capital on the underlying single-family whole loans and guarantees.

In the second step, the Enterprises would calculate capital relief accounting for tranche ownership. The proposed approach would provide the Enterprises capital relief from transferring all or part of a credit risk exposure. For each tranche or exposure, the Enterprises would identify the portion of the tranche owned by private investors or covered by a loss sharing agreement. Then, in general, the Enterprises would calculate the capital relief as the product of the credit risk capital allocated to the exposure and the portion of the tranche owned by private investors or covered by a loss sharing agreement.

However, this initial calculation of capital relief must be adjusted to account for loss timing and counterparty credit risk. In particular, CRT coverage can expire before the underlying loans mature. Also, loss sharing agreements may be subject to counterparty credit risk. Capital relief afforded by credit risk transfers would be overstated absent such an adjustment.

Therefore in the third step, for each tranche, capital relief would be lowered by a loss timing factor that accounts for the timing of coverage. The loss timing factor would address the mismatch between lifetime single-family losses on the whole loans and guarantees underlying the CRT and the term of coverage on the CRT.

In the fourth step, for loss sharing agreements, the Enterprises would apply haircuts to previously calculated capital relief to adjust for counterparty credit risk. In particular, the Enterprises would consider the credit worthiness of each counterparty when assessing the contribution of loss sharing arrangements such that the capital relief is lower for less credit worthy counterparties. At the same time, in the proposed approach, collateral posted by a counterparty would be considered when determining the counterparty credit risk, as posted collateral would at least partially offset the effect of the counterparty exposure.

Lastly, the Enterprises would calculate total capital relief by adding up capital relief for each tranche in the CRT. Further, in the event that the CRT has multiple pool groups, then the proposed rule would calculate each group's capital relief separately.

Overall, the proposed approach would afford relatively higher levels of capital relief to the riskier, more junior tranches of a CRT that are the first to absorb unexpected losses, and relatively low levels of capital relief to the most senior tranches. The

proposed approach would also afford greater capital relief for transactions that provide coverage (i) on a higher percentage of unexpected losses, (ii) for a longer period of time, and (iii) with lower levels of counterparty credit risk.

For comparison, the proposed approach is analogous to the Simplified Supervisory Formula Approach ("SSFA") under the banking regulators' capital rules applicable to banks, savings associations, and their holding companies.[40] However, the proposed approach deviates from SSFA in that it: (i) provides for a more refined view of risk differentiation across transactions by accounting for differences in maturities between the CRT and its underlying whole loans and guarantees, and (ii) does not discourage CRT transactions by elevating aggregate post-transaction risk-based capital requirements above risk-based capital requirements on the underlying whole loans and guarantees. In particular, the SSFA requires more capital on a transaction-wide basis than would be required if the underlying assets had not been part of a risk transfer to account for the complexity introduced by the securitization structure. Under SSFA, if an Enterprise held every tranche of a CRT, its overall capital requirement would be greater than if the Enterprise held the underlying assets in portfolio. In order to avoid creating incentives that would discourage the Enterprises from selling tranches as part of their credit risk transfer programs, under the proposed rule, an Enterprise would be required to hold the same level of capital whether the Enterprise held every tranche of its CRT or whether the Enterprise held the underlying assets in portfolio.

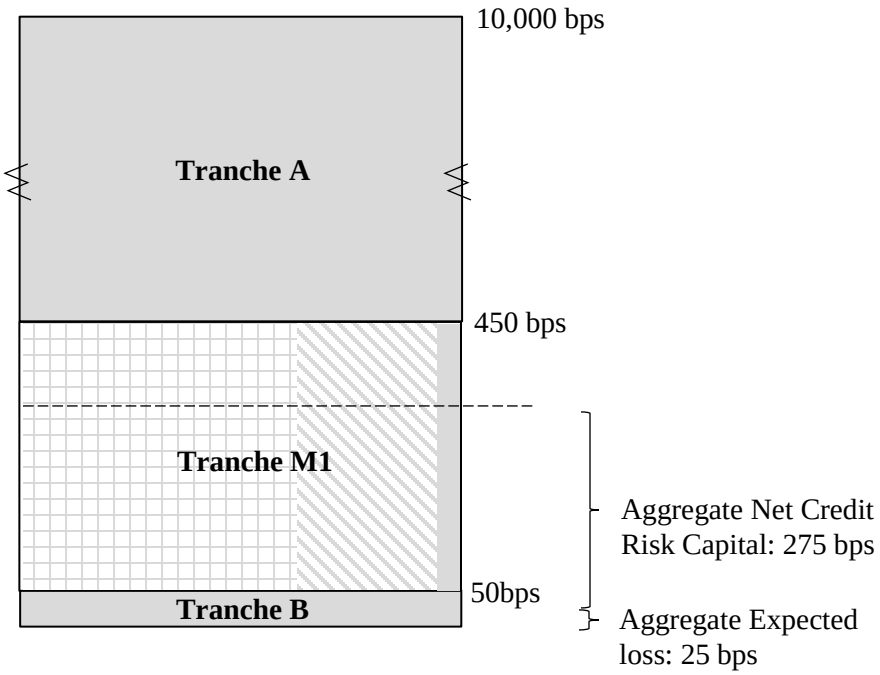
Single-Family CRT Example

[40] *See* 12 CFR 3.211 (OCC); 12 CFR 217.43 (Federal Reserve Board); 12 CFR 324.43 (FDIC).

The proposed rule would require each Enterprise to calculate capital relief using a five-step approach. The following example provides an illustration of the five steps. Consider the following inputs from an illustrative CRT (see Figure 1):

- $1,000 million in UPB of performing 30-year fixed rate single-family whole loans and guarantees with original LTVs greater than 60 percent and less than or equal to 80 percent;
- CRT coverage term of 10 years;
- Three tranches – B, M1, and A – where tranche B attaches at 0 bps and detaches at 50 bps, tranche M1 attaches at 50 bps and detaches at 450 bps, and tranche A attaches at 450 bps and detaches at 10,000 bps;
- Tranches B and A are retained by the Enterprise, and ownership of tranche M1 is split between capital markets (60 percent), a reinsurer (35 percent), and the Enterprise (5 percent);
- An aggregate net credit risk capital requirement on the single-family whole loans and guarantees underlying the CRT of 275 bps;
- Aggregate expected losses on the single-family whole loans and guarantees underlying the CRT of 25 bps; and
- The reinsurer posts $2.8 million in collateral, has a counterparty financial strength rating of 3, and does not have a high level of mortgage concentration risk.

Figure 1: Single-Family CRT Example



Ownership:
Tranche A: 100% retained (in solid gray).
Tranche M1: 60% to capital markets (gray grid lines), 35% reinsured (in gray diagonal lines), and 5% retained (in solid gray).
Tranche B: 100% retained (in solid gray).

In the first step, the Enterprises would distribute the aggregate net credit risk capital to the tranches of the CRT independent of tranche ownership, while controlling for aggregate expected losses. For the illustrative CRT, the Enterprise would allocate aggregate net credit risk capital and expected losses to the riskiest, most junior tranche (tranche B) before the mezzanine tranche (tranche M1) and the most senior tranche (tranche A).

For the illustrative CRT, the Enterprise would allocate aggregate net credit risk capital and expected losses such that the riskiest, most junior tranche (tranche B) would receive its allocation before the mezzanine tranche (tranche M1) and the most senior tranche (tranche A). In particular, the Enterprise would first distribute aggregate

expected losses (25 bps) and 25 bps of aggregate net credit risk capital to tranche B. The Enterprise would then distribute the remaining aggregate credit risk capital (250 bps) to tranche M1. As tranche A's attachment point exceeds the sum of aggregate expected losses and aggregate net credit risk capital, the Enterprise would not allocate net credit risk capital to tranche A.

In the second step, the Enterprises would calculate capital relief accounting for tranche ownership. This approach would provide the Enterprise capital relief from transferring all or part of a credit risk exposure. For the illustrative CRT, the Enterprise would only receive capital relief from 95 percent of tranche M1 since the Enterprise retains all of tranches A and B and retains only 5 percent of tranche M1. The Enterprise would calculate the capital relief on tranche M1 as the product of the allocated aggregate net credit risk capital (250 bps) and sum of the portion of the tranche owned by private investors (60 percent) and covered by a reinsurer (35 percent). Thus, the Enterprise would calculate initial capital relief of 237.5 bps or the product of 250 bps and 95 percent.

However, this initial calculation of capital relief must be adjusted to account for loss timing and counterparty credit risk. Therefore, in the third step the proposed rule lowers initial capital relief by a loss timing factor that accounts for the timing of coverage. The loss timing factor addresses the mismatch between lifetime losses on the 30-year fixed-rate single-family whole loans and guarantees underlying the illustrative CRT and the CRT's coverage of 10 years. The loss timing factor for the illustrative CRT with 10 years of coverage and backed by 30-year fixed-rate single-family whole loans and guarantees with original LTVs greater than 60 percent and less than or equal to 80

percent is 88 percent. Therefore, the Enterprise would lower the capital relief to 209 bps by multiplying together the loss timing factor (88 percent) and initial capital relief (237.5 bps).

In the fourth step, the Enterprise would apply haircuts to previously calculated capital relief to adjust for counterparty credit risk from the reinsurance arrangement. In practice, the Enterprise would identify the reinsurer's uncollateralized exposure and apply a haircut. For the illustrative CRT, the Enterprise would first determine the reinsurer's uncollateralized exposure by subtracting the reinsurer's collateral amount ($2.8 million) from the reinsurer's exposure as follows:

$$\$1{,}000\ million * \left(\frac{35\%}{60\%+35\%}\right) * \left(\frac{209\ bps}{10{,}000}\right) - \$2.8\ million = \$4.9\ million$$

The Enterprise would then consider the credit worthiness of the reinsurer and apply a haircut. For the illustrative CRT, the reinsurer has a counterparty financial strength rating of 3 and does not have a high level of mortgage concentration risk. Further, the single-family whole loans and guarantees backing the illustrative CRT are performing and have a 30-year term. Thus, the CP Haircut from Table 22 is 5.2 percent. The Enterprise would calculate counterparty credit risk from the reinsurer as the product of the CP Haircut and the reinsurer's uncollateralized exposure. The product would be converted into basis points as follows:

$$10{,}000 * \left(\frac{\$4.9\ million * 5.2\%}{\$1{,}000\ million}\right) = 2.5\ bps$$

Lastly, the Enterprise would calculate total capital relief by adding up capital relief for each tranche in the CRT and reducing capital relief by any counterparty credit risk capital. For the illustrative CRT, the Enterprise would calculate total capital relief at

206.5 bps or capital relief after adjusting for ownership and loss timing (209 bps) less counterparty credit risk (2.5 bps).

Seasoned Single-Family CRT Capital Relief

A seasoned single-family CRT differs from when it was newly-issued due to the changing risk profile on the whole loans and guarantees underlying the CRT. Therefore, under the proposed rule, the Enterprises would be required to re-calculate capital relief on their seasoned single-family CRT transactions with each submission of capital results.

For each seasoned single-family CRT, the proposed rule would require the Enterprises to update the data elements originally considered. In particular, the proposed rule would require the Enterprises to update credit risk capital and expected losses on the underlying whole loans and guarantees, tranche structure, ownership, and counterparty credit risk.

CRT Prepayments

The rate at which principal on a CRT's underlying loans is paid down (principal paydowns) affects the allocation of credit losses between the Enterprises and investors/reinsurers. Principal paydowns include regularly scheduled principal payments and unscheduled principal prepayments. In general, a CRT's tranches are paid down in the order of their seniority outlined in the CRT's transaction documents. For tranches with shared ownership, principal paydowns are allocated on a pro-rata basis. As CRT analysts have noted, under certain conditions unusually fast prepayments can erode the credit protection provided by the CRT by paying down the subordinate tranches and leave the Enterprises more vulnerable to credit losses. In particular, unexpectedly high

prepayments can compromise the protection afforded by CRTs and reduce the CRT's benefit or capital relief.

FHFA reviewed the effect on capital relief of applying stressful prepayment and loan delinquency projections to recent CRTs. FHFA concluded that deal features, specifically triggers, mitigate the effects of fast prepayments by diverting unscheduled principal prepayments to the Enterprise-held senior tranche. For example, a minimum credit enhancement trigger redirects prepayments to the senior tranche when the senior credit enhancement falls below a pre-specified threshold. Similarly, a delinquency trigger diverts prepayments when the average monthly delinquency balance (*i.e.*, underlying single-family whole loans and guarantees that are 90 days or more delinquent, in foreclosure, bankruptcy, or REO) exceeds a pre-specified threshold.

In addition to triggers, FHFA considered three other possible approaches to address the impact of stressful CRT prepayments. First, FHFA considered whether it would be desirable to include language in the proposed rule requiring specific triggers in the Enterprises' CRT transactions. However, FHFA decided against such language because variations across transactions complicate the establishment of fixed triggers that could be prudently applied uniformly across deals. Further, mandating a fixed set of triggers could reduce innovation in managing principal paydowns. Moreover, FHFA has the authority to review CRT terms before issuance and therefore can ensure transactions include appropriate triggers. Second, FHFA considered using a simple multiplier to reduce the capital relief from CRTs. However, this would inadequately capture differences in collateral, subordination, and trigger structures between transactions. Finally, FHFA considered an approach that would define capital relief based on a

weighted average of losses arising from averaging cash flows derived under multiple prepayment scenarios. However, FHFA decided that the complexity and opacity of this approach would be inconsistent with the overall goal of having simple and transparent credit risk capital requirements.

After considering these alternatives, FHFA believes that the proposed rule appropriately considers single-family CRT prepayments. However, FHFA is seeking public comment on CRT prepayments and is soliciting specific alternative approaches for addressing CRT prepayments in the proposed capital framework.

Question 9: FHFA is soliciting detailed proposals for a simple and transparent approach to reflect the impact of stressful prepayments on CRT capital relief. What modifications or alternatives should FHFA consider and why?

FHFA is soliciting comments on the capital relief treatment of single-family CRTs in the proposed rule. Providing capital relief for the Enterprises' credit risk transfer transactions is an aspect of the proposed rule that has received much consideration.

Credit risk transfer transactions reduce risk to taxpayers. Providing capital relief for CRTs, no matter what form the CRTs take, gives the Enterprises an incentive to transfer credit risk to third parties to reduce the risk the Enterprises pose to taxpayers. The Enterprises design their credit risk transfer transactions to protect against the risk that an investor might not have the funds to cover agreed-upon credit losses – often referred to as reimbursement risk – when such losses occur. The Enterprises use a number of different approaches to transfer credit risk, including transaction structures that are fully funded upfront and, therefore, have no reimbursement risk, and other transactions that

require investors to partially or fully collateralize the investment to provide the Enterprises with assurance of available funds in the future. In addition, the credit risk protection provided by investors on fully funded CRT transactions is solely dedicated to absorbing credit risk and cannot be redirected for other uses. The Enterprises target loans that have the highest relative credit risk for CRT transactions, thereby providing a significant amount of credit risk protection.

While CRT transactions are designed to provide credit risk protection for the Enterprises, this protection is not the same as the protection provided by capital. Because third parties assume the credit risk on the specific loans included in CRT reference pools, the credit protection for individual CRTs is not fungible to cover losses on other loans, whereas capital can be used to absorb losses at the portfolio level and is available to cover all loans.

In addition to the remaining reimbursement risk of certain CRT transactions, there is also the risk that loan prepayments could reduce the amount of credit risk protection able to be provided by investors. As discussed above, the Enterprises work to mitigate this prepayment risk by incorporating deal triggers into CRT transactions, but there remains risk that these triggers will not act as intended during a credit event. Additionally, the Enterprises' single-family CRTs have not been tested in a period of market stress because the programs started in 2013 and have expanded in a period of strong house price appreciation. Lastly, U.S. bank regulators have not given banks capital relief for credit risk transfers as FHFA has proposed to do in this rule for the Enterprises.

Question 10: Does the proposed rule's approach of providing capital relief for CRTs adequately capture the risk and benefits associated with the Enterprises' CRT transactions? Should FHFA consider modifications or alternatives to the proposed rule's approach of providing capital relief for the Enterprises' CRTs, and if so, what modifications or alternatives, and why?

Question 11: FHFA is soliciting comments on the proposed approaches for calculating CRT loss timing factors. Should the CRT loss timing factors be updated as the CRT ages? What modifications should FHFA consider and why?

c. Market Risk

This section corresponds to Proposed Rule §§ 1240.17 through 1240.18

Single-Family Whole Loans and Guarantees

Single-family whole loans held in the Enterprises' portfolios have market risk from changes in value due to movements in interest rates and credit spreads. As the Enterprises currently hedge interest rate risk at the portfolio level, the market risk capital requirements in the proposed rule focus on spread risk.

The proposed rule would determine market risk capital requirements for single-family whole loans using both single point estimates and the Enterprises' internal models.

Single-Family Re-performing and Non-Performing Whole Loans

The proposed rule would require an Enterprise to calculate market risk capital on single-family re-performing and non-performing whole loans using a single point estimate approach. The primary risk on these loans is credit risk and, in general, borrowers in these categories tend to have limited refinancing opportunities due to recent or current delinquencies. Therefore, re-performing and non-performing loans are

relatively insensitive to prepayment risk, and FHFA believes the market risk profile of these loans would be sufficiently represented by a single point capital requirement.

The proposed rule would assign a single point estimate of 4.75 percent of the market value of assets for re-performing and non-performing whole loans. This proposal reflects the average of the Enterprises' internal model estimates.

New Originations and Performing Seasoned Loans

The proposed rule would require an Enterprise to calculate market risk capital on single-family new originations and performing seasoned whole loans using the internal models approach.

In general, the complexity of the market risk profile on newly originated and performing seasoned whole loans is amplified due to high prepayment sensitivity. In particular, prepayment risk on performing whole loans may vary significantly across amortization terms, vintages, and mortgage rates. The high prepayment sensitivity might suggest that more simplified approaches, such as the single point estimate approach, would not capture key risk drivers. Also, spread shocks may vary across a variety of single-family loan characteristics. Thus, the spread duration approach, which relies on a constant spread shock, may not capture key single-family market movements. An internal models approach, however, would allow the Enterprises to differentiate market risk across multiple risk characteristics such as amortization term, vintage, and mortgage rates. Further, the Enterprises could account for important market risk factors, such as updated spread shocks, to reflect market changes.

Enterprise- and Ginnie Mae-Guaranteed Single-Family Mortgage-Backed Securities

Enterprise and Ginnie Mae single-family MBS and CMOs held in the Enterprises' portfolios have market risk stemming from changes in value due to movements in interest rates and credit spreads. As discussed in Section II.C.4.c with regard to the market risk capital requirements for single-family whole loans, the Enterprises currently hedge interest rate risk at the portfolio level, and therefore the market risk capital requirements in the proposed rule focus on spread risk. In the proposed rule, the market risk capital requirement for Enterprise and Ginnie Mae single-family MBS and CMOs would be determined using the internal models approach and the Enterprises' internal models for market risk.

In general, the complexity of the market risk profile on single-family MBS and CMOs is amplified due to high prepayment sensitivity of the underlying collateral. Further, CMOs can often contain complex features and structures that alter prepayments across different tranches based on the CMO's structure. As a result, within this category of assets, spread durations may vary significantly across mortgage products, amortization terms, vintages and mortgage rates and tranches. The use of an Enterprise's internal models to calculate market risk capital requirements would allow the Enterprise to account for important market risk factors that affect spreads and spread durations.

Notably, capital results that rely on internal model calculations can be opaque and result in different capital requirements across Enterprises for the same or similar exposures. Hence, the proposed rule would rely on an Enterprise's internal models solely only when the market risk complexity is sufficiently high that using a single point estimate or spread duration approach would inadequately represent the exposure's

underlying single-family market risk. Further, internal models used in the determination of market risk capital requirements will be subject to ongoing supervisory review. Finally, an Enterprise's model risk management is subject to FHFA's 2013-07 Advisory Bulletin.

Question 12: FHFA is soliciting comments on the proposed approaches for calculating market risk capital requirements for single-family whole loans. What modifications should FHFA consider and why?

Question 13: FHFA is soliciting comments on the proposed approach for calculating market risk capital requirements for Enterprise and Ginnie Mae single-family MBS and CMOs. What modifications should FHFA consider and why?

d. Operational Risk

This section corresponds to Proposed Rule §§ 1240.19 through 1240.20

As described in section II.C.2 above, the proposed rule would establish an operational risk capital requirement of 8 basis points for all assets. For single-family whole loans and guarantees, and Enterprise and Ginnie Mae single-family MBS and CMOs, the operational risk capital requirement would be 8 basis points of the unpaid principal balance of assets with credit risk or 8 basis points of the market value of assets with market risk.

e. Going-Concern Buffer

This section corresponds to Proposed Rule §§ 1240.21 through 1240.22

As described in section II.C.3 above, the proposed rule would establish a going-concern buffer of 75 basis points for all assets. For single-family whole loans and guarantees, and Enterprise and Ginnie Mae single-family MBS and CMOs, the going-

concern buffer would be 75 basis points of the unpaid principal balance of assets with credit risk or 75 basis points of the market value of assets with market risk.

f. Impact

Table 23: Fannie Mae and Freddie Mac Combined Estimated Total Risk-Based Capital Requirements for Single-Family Whole Loans, Guarantees, and Related Securities as of September 30, 2017

	Capital Requirement		
	$billions	bps	Share, %
Net Credit Risk	$91.2		
Credit Risk Transferred	($13.5)		
Post-CRT Net Credit Risk	$77.7	163	60%
Market Risk	$14.2	30	11%
Going-Concern Buffer	$34.9	73	27%
Operational Risk	$3.7	8	3%
Total Capital Requirement	$130.5	273	100%
Total UPB, $billions	$4,778.3		

Table 24: Fannie Mae and Freddie Mac Combined Estimated Credit Risk Capital Requirements for Single-Family Whole Loans and Guarantees as of September 30, 2017 – by Loan Category*

	Capital Requirement, $billions	UPB, $billions	Capital Requirement, bps
New Originations	$7.6	$296	257
Performing Seasoned Loans	$52.2	$3,787	138
Re-Performing Loans	$19.7	$472	418
Non-Performing Loans	$11.8	$102	1,149
Net Credit Risk	$91.2	$4,657	196
Credit Risk Transferred	($13.5)		
Post-CRT Net Credit Risk	$77.7	$4,657	167

***** *Excludes both Enterprises' retained portfolio holdings of MBS guaranteed by the other Enterprise, and Ginnie Mae MBS.*

5. Private-Label Securities

This section corresponds to Proposed Rule §§ 1240.24 through 1240.29

The Enterprises have exposure to residential private-label securities (PLS) in that they hold PLS in portfolio as investments and guarantee PLS that have been re-securitized by an Enterprise (PLS wraps). The proposed rule would establish risk-based capital requirements for the credit risk associated with private-label securities, including PLS wraps, and the market risk associated with private-label securities with market risk exposure. The risk-based capital requirement for PLS and PLS wraps would also include a risk-invariant operational risk capital requirement and a going-concern buffer.

Credit Risk

The proposed rule would use the SSFA methodology to determine the credit risk capital requirement for private-label securities with credit risk exposure in a manner based upon how banks use the SSFA to determine the capital requirements for securitized assets. For each private-label security, the proposed rule would set forth a minimum risk-based capital requirement as provided in the SSFA methodology, which would be adjusted based upon SSFA methodology to account for the performance of the underlying collateral and the level of subordination. The SSFA formulas would impose high capital requirements on subordinated risky tranches of a securitization relative to more senior positions that are less subject to credit losses.

Defining the PLS capital requirements using the SSFA methodology provides two advantages. First, the SSFA is a relatively simple and transparent approach to calculate private-label securities capital requirements. Second, using the SSFA methodology would create consistency in capital calculations between the Enterprises and private

industry, as the banking agencies apply the SSFA to banking institutions subject to their jurisdiction. While there are shortcomings associated with using the SSFA methodology, the relatively high data demands associated with alternative loan-level approaches, along with the Enterprises' relatively limited amount of PLS holdings, lead FHFA to believe that the straightforward SSFA methodology would be appropriate for determining credit risk capital requirements for PLS and PLS wraps.

Market Risk

Because PLS wraps do not expose the Enterprises to market risk, PLS wraps would have a zero market risk capital requirement. For each private-label security with market risk exposure, the proposed rule would define market risk capital only with respect to spread risk, namely a loss in value of an asset relative to a risk free or funding benchmark due to changes in perceptions of performance or liquidity. Absent hedging, changes in interest rates would also have a direct effect on the value of private label securities. However, the Enterprises make extensive use of callable debt and derivatives to hedge interest rate risk. Therefore, in the proposed rule, market risk would affect the capital requirements for private-label securities only through changes in spreads.

In particular, the market risk capital requirement for PLS would be defined as the product of a change in the spread of the private-label security (spread shock) and the sensitivity of a private-label security's expected price to changes in the private-label security's spread (spread duration). The constant spread shock would be set at 265 basis points, reflecting estimates provided to FHFA by the Enterprises, while the Enterprises would use their own internal approaches to estimate the spread duration for each PLS in order to account for variation in spread durations across private-label securities. Finally,

the product of the PLS market risk capital requirement in basis points and the market value of a private-label security would yield the PLS market risk capital requirement in dollars. Internal models used in the determination of market risk capital requirements would be subject to ongoing supervisory review.

Operational Risk

As described in section II.C.2 above, the proposed rule would require the Enterprises to hold an operational risk capital requirement of 8 bps for all assets. For private label securities, the operational risk capital requirement would be 8 bps of the securities' market value.

Going-Concern Buffer

As described in section II.C.3 above, the proposed rule would require the Enterprises to hold a going-concern buffer of 75 bps for all assets. For private label securities, the going-concern buffer would be 75 bps of the securities' market value.

Impact

Table 25: Fannie Mae and Freddie Mac Combined Estimated Risk-Based Capital Requirements for Private-Label Securities as of September 30, 2017

	Capital Requirement		
	$billions	bps	Share, %
Credit Risk	$2.2	1,502	64%
Market Risk	$1.1	767	33%
Going-Concern Buffer	$0.1	60	3%
Operational Risk	$0.01	6	0%
Total Capital Requirement	$3.4	2,336	100%
Total UPB, $billions	$14.4		

Question 14: FHFA is soliciting comments on the proposed risk-based capital requirements for private-label securities. What modifications should FHFA consider and why?

6. Multifamily Whole Loans, Guarantees, and Related Securities

This section corresponds to Proposed Rule §§ 1240.31 through 1240.45

Overview

The proposed rule would establish risk-based capital requirements for the Enterprises' multifamily businesses. It is important to specify separate multifamily capital requirements in order to capture the unique nature of the multifamily lending business and its particular risk drivers. A typical multifamily loan, including those packaged together into mortgage-backed securities (MBS), is roughly $10 million, requires a 10-year balloon payment, and includes a 30-year amortization period. In addition, multifamily loans finance the acquisition and operation of commercial property collateral, as opposed to single-family dwellings. Multifamily properties are typically apartment buildings owned by real estate investors who rent the apartment units expecting to realize a profit after paying property operating and financing expenses.

The proposed rule would apply to multifamily whole loans, guarantees, and related securities held for investment. Multifamily whole loans are those that the Enterprises keep in their portfolios after acquisition. Multifamily guarantees are guarantees provided by the Enterprises of the timely receipt of payments to investors in mortgage-backed securities that have been issued by the Enterprises or other security issuers and are backed by previously acquired multifamily whole loans. Except in cases where the Enterprises transfer credit risk to third-party private investors, the Enterprises

retain the credit risk from whole loans and guarantees. The Enterprises also retain market risk on whole loans held in portfolio and loans that they retain but intend to sell at a later date.

To implement the proposed capital requirements, the Enterprises would use a set of multifamily grids and risk multipliers to calculate credit risk capital, as well as a collection of straightforward formulas to calculate market risk capital, operational risk capital, and a going-concern buffer.

The proposed rule would first establish a framework through which the Enterprises would determine their gross multifamily credit risk capital requirements. The proposed methodology is simple and transparent, relying on a set of look-up tables (grids and risk multipliers) that take into account several important loan characteristics including debt-service-coverage ratio (DSCR), loan-to-value ratio (LTV), payment performance, loan term, interest-only (IO), loan size, and special products, among others.

The proposed grid and multiplier framework is consistent with existing financial regulatory regimes and would thereby facilitate comparison and examination of the Enterprises' risk-based capital requirements. FHFA believes that this straightforward and transparent approach, as opposed to one involving a complex set of credit models and econometric equations, would provide sufficient risk differentiation across the Enterprises' different types of multifamily business exposures without placing an undue compliance burden on the Enterprises.

The proposed rule would then provide a mechanism for the Enterprises to calculate multifamily capital relief by reducing gross credit risk capital requirements based on the amount of loss shared or risk transferred to other parties. The proposed

CRT calculation would include a capital requirement for multifamily counterparty credit risk stemming from contractual arrangements with lenders, re-insurers, and other counterparties with which the Enterprises engage. In doing so, the rule would account for differences in the Enterprises' multifamily business models.

The proposed rule would establish market risk capital requirements for multifamily whole loans using the spread duration approach. For multifamily securities held for investment, the parameters would apply to two asset types: whole loans and Enterprise - and Ginnie Mae-issued mortgage-backed securities (MBS).

In addition, the proposed rule would establish an operational risk capital requirement for the Enterprises' multifamily businesses that is invariant to risk. The proposed rule would base the operational risk capital requirement on the Basel Basic Indicator Approach, which accounts for gross income and assets by product line.

Lastly, the proposed rule would establish a going-concern buffer for the Enterprises' multifamily businesses that is invariant to risk. The purpose of the going-concern buffer is to allow the Enterprises, in this case as it pertains to their multifamily businesses, to remain as functioning entities during and after a period of severe financial distress.

Multifamily Business Models

The proposed rule would apply to both Enterprises equally. However, when appropriate, the proposed rule would account for differences in the Enterprises' multifamily business models. These differences are evident, for example, when considering certain elements of the proposed rule related to credit risk transfer.

As of late 2017, Fannie Mae's multifamily business relied on the Delegated Underwriting and Servicing (DUS) program. The DUS program is a loss-sharing program that seeks to facilitate the implementation of common underwriting and servicing guidelines across a defined group of multifamily lenders. The number of multifamily lenders in the DUS program has historically ranged between 25 and 30 since the program's inception in the late 1980s. Fannie Mae typically transfers about one-third of the credit risk to those lenders, while retaining the remaining two-thirds of the credit risk plus the counterparty risk associated with the DUS lender business relationship. The proportion of risk transferred to the lender may be more or less than one-third under a modified version of the typical DUS loss-sharing agreement.

In contrast, as of late 2017, Freddie Mac's multifamily model focused almost exclusively on structured, multi-class securitizations. While Freddie Mac has a number of securitization programs for multifamily loans, the most heavily used program is the K-Deal program. Under the K-Deal program, which started in 2009, Freddie Mac sells a portion of unguaranteed bonds (mezzanine and subordinate), generally 10 to 15 percent, to private market participants. These sales typically result in a transfer of a very high percentage of, if not all of, the credit risk. Freddie Mac generally assumes credit and market risk during the period between loan acquisition and securitization. In addition, after securitization, Freddie Mac generally retains a portion of the credit risk through ownership or guarantee of senior K-Deal tranches.

Despite these differences in the Enterprises' multifamily business models, the proposed rule would accommodate both Enterprises' current lending practices, and would not preclude them from adopting a version of one another's lending practices in the

future. Specifically, the proposed rule would explicitly include variations in the estimation of required credit risk capital under each Enterprise's risk transfer approach, but would not limit an Enterprise to a particular approach.

Rule Framework and Implementation

The proposed rule would establish risk-based capital requirements for the Enterprises' multifamily businesses, including their whole loans and guarantees and securities held for investment. Using the proposed capital requirements, the Enterprises would calculate the minimum amount of funds needed to support their multifamily operations under stressed economic conditions, as discussed briefly above and in detail below. The proposed multifamily capital requirements would comprise the following components: credit risk capital, including adjustments for credit risk transfers; market risk capital; operational risk capital; and a going-concern buffer. Each component is discussed individually below.

a. Credit Risk

This section corresponds to Proposed Rule §§ 1240.31 through 1240.36

Multifamily Whole Loans and Guarantees

The proposed rule would establish credit risk capital requirements for the Enterprises' multifamily whole loans and guarantees. The multifamily credit risk capital requirements would be determined by the minimum funding necessary to cover the difference between estimated lifetime stress losses in severely adverse economic conditions and expected losses. For the purpose of the proposed rule, the multifamily-specific stress scenario involves two parameters:

- Net Operating Income (NOI), where NOI represents Gross Potential Income (gross rents) net of vacancy and operating expenses, and
- Property values.

Adverse economic conditions are generally accompanied by either a decrease in expected property revenue or an increase in perceived risk in the multifamily asset class, or both. A decrease in expected occupancy would lead to a decline in income generated by the property, or a lower NOI, while an increase in perceived risk would lead to an increase in the capitalization rate used to discount the NOI when assessing property value. A capitalization rate, or cap rate, is defined as NOI divided by property value, so if NOI is held constant, an increase in the cap rate is directly related to a decrease in property values. For the purpose of the proposed rule, the multifamily-specific stress scenario assumes an NOI decline of 15 percent and a property value decline of 35 percent. This stress scenario is consistent with market conditions observed during the recent financial crisis, views from third-party market participants and data vendors, and assumptions behind the Dodd-Frank Act Stress Test (DFAST) severely adverse scenario. The estimated differences between stress losses in a severely adverse scenario and expected losses are reflected in the multifamily credit risk capital grids discussed below.

Under the proposed rule, the Enterprises would calculate credit risk capital for multifamily whole loans and guarantees by completing the following simplified steps:

1) Determine gross multifamily credit risk capital through the use of multifamily-specific credit risk capital grids;
2) Adjust gross multifamily credit risk capital for additional risk characteristics using a set of multifamily-specific risk multipliers; and

3) Determine net multifamily credit risk capital by adjusting gross multifamily credit risk capital for credit risk transfers.

Base Credit Risk Capital Requirements

The proposed rule would require the Enterprises to determine base multifamily credit risk capital using a set of two look-up tables, or grids – one for each multifamily segment. Accordingly, for the purpose of the proposed rule, the Enterprises would divide their multifamily whole loans and guarantees into two segments by interest rate contract: one segment for whole loans and guarantees with fixed rate mortgages (FRMs), and one segment for whole loans and guarantees with adjustable rate mortgages (ARMs). Multifamily whole loans that have both a fixed rate period and an adjustable rate period, also known as hybrid loans, would be classified and treated as a multifamily FRM during the fixed rate period, and classified and treated as a multifamily ARM during the adjustable rate period.

Each segment would have a unique two-dimensional multifamily credit risk capital grid which the Enterprises would use to determine base credit risk capital for each whole loan and guarantee before applying subsequent credit risk multipliers, discussed in the next section. The dimensions of the multifamily credit risk capital grids would be ranges based on two important underlying multifamily loan characteristics: acquisition debt-service-coverage ratio (DSCR) and acquisition loan-to-value ratio (LTV). These two risk factors are crucial for forecasting the future performance of loans on commercial real estate properties, including multifamily properties. DSCR is the ratio of property Net Operating Income (NOI) to the loan payment. A DSCR greater than 1.0 indicates that the property generates sufficient funds to cover the loan obligation, while the

opposite is true for a DSCR less than 1.0. LTV, in turn, is the ratio of loan amount to property value. In commercial real estate financing, a DSCR of 1.25 and an LTV of 80 percent represent common and reasonable standards for underwriting and performance evaluation purposes.

In the proposed rule, the multifamily credit risk capital grids were populated using model estimates from both Enterprises, averaged to determine the capital requirement associated with each cell in the multifamily credit risk capital grids. To derive the estimates, the Enterprises were asked to run their multifamily credit models using the multifamily-specific stress scenario described above and a synthetic loan with a baseline risk profile with respect to risk factors other than DSCR and LTV. Specifically, the proposed FRM credit risk capital grid was populated using loss estimates (stress losses minus expected losses) for a multifamily loan with varying DSCR and LTV combinations and the following risk characteristics: $10 million loan amount, 10-year balloon with a 30-year amortization period, non-interest-only, not a special product, and never been delinquent or modified. Similarly, the proposed ARM credit risk capital grid was populated using loss estimates (stress losses minus expected losses) for a multifamily loan with varying DSCR and LTV combinations and the following risk characteristics: 3 percent origination interest rate, $10 million loan amount, 10-year balloon with a 30-year amortization period, non-interest-only, not a special product, and never been delinquent or modified. Thus, each cell of the proposed FRM (ARM) credit risk capital grid represents the average estimated difference, in basis points, between stress losses and expected losses for synthetic FRM (ARM) loans described above with a DSCR and LTV in the tabulated ranges. This capital requirement, in basis points, would be applied to the

unpaid principal balance (UPB) of each multifamily whole loan and guarantee held by the Enterprises with exposure to credit risk.

The proposed rule would require that the Enterprises use the multifamily credit risk capital grids in their regulatory capital calculations for both newly acquired multifamily whole loans and guarantees, as well as seasoned multifamily whole loans and guarantees. A newly acquired multifamily whole loan or guarantee is a whole loan or guarantee originated within the prior 5 months, while a seasoned multifamily whole loan or guarantee is a whole loan or guarantee originated more than 5 months ago. For newly acquired whole loans and guarantees, the proposed rule would require the Enterprises to use DSCRs and LTVs determined at acquisition to calculate capital requirements using the multifamily credit risk capital grids. For seasoned whole loans and guarantees, the proposed rule would require the Enterprises to use DSCRs and LTVs updated as of the relevant capital calculation date, also known as the mark-to-market DSCR (MTMDSCR) and mark-to-market LTV (MTMLTV), to calculate capital requirements using the multifamily credit risk capital grids.

The proposed multifamily credit risk capital grids for the FRM and ARM loan segments are presented in Tables 26 and 27, respectively:

Table 26: Multifamily FRM Base Credit Risk Capital (in bps)

		Acquisition LTV or MTMLTV									
		LTV <=35%	35% < LTV <=45%	45% < LTV <=55%	55% < LTV <=65%	65% < LTV <=70%	70% < LTV <=75%	75% < LTV <=80%	80% < LTV <=90%	90% < LTV <=100%	LTV >100%
Acquisition DSCR or MTMDSCR	DSCR<1.00	415	480	610	870	996	1119	1226	1328	1378	1453
	1.00<= DSCR <1.15	359	413	520	735	843	943	1028	1118	1160	1224
	1.15<= DSCR< 1.20	321	368	460	645	740	825	895	978	1015	1071
	1.20<= DSCR< 1.25	298	338	418	578	660	733	778	855	895	955
	1.25<= DSCR< 1.30	266	303	375	520	593	645	690	755	790	843
	1.30<= DSCR< 1.35	251	283	345	470	528	568	608	670	700	745
	1.35<= DSCR< 1.50	231	259	315	428	475	510	548	610	640	685
	1.50<= DSCR< 1.65	201	218	250	315	345	375	408	455	498	561
	1.65<= DSCR< 1.80	175	185	205	245	270	298	330	378	423	490
	1.80<= DSCR< 1.95	129	138	155	190	210	235	258	325	375	450
	1.95<= DSCR< 2.10	118	122	130	163	180	204	221	299	351	430
	2.10<= DSCR< 2.25	106	110	118	149	165	188	203	286	339	420
	DSCR>=2.25	100	104	111	142	158	180	194	279	333	415

Table 27: Multifamily ARM Base Credit Risk Capital (in bps)

		Acquisition LTV or MTMLTV									
		LTV <=35%	35% < LTV <=45%	45% < LTV <=55%	55% < LTV <=65%	65% < LTV <=70%	70% < LTV <=75%	75% < LTV <=80%	80% < LTV <=90%	90% < LTV <=100%	LTV >100%
Acquisition DSCR or MTMDSCR	DSCR<1.00	647	691	745	1060	1223	1375	1508	1691	1831	2041
	1.00<= DSCR <1.25	569	603	638	902	1034	1159	1264	1424	1542	1720
	1.25<= DSCR< 1.30	506	535	567	797	908	1014	1101	1245	1349	1505
	1.30<= DSCR< 1.36	454	478	503	704	810	901	956	1089	1190	1341
	1.36<= DSCR< 1.42	410	430	452	630	720	789	847	962	1050	1183
	1.42<= DSCR< 1.47	361	390	408	568	637	688	747	854	931	1046
	1.47<= DSCR< 1.53	298	332	372	511	565	619	674	773	849	962
	1.53<= DSCR< 1.70	236	265	293	376	410	451	501	577	660	784
	1.70<= DSCR< 1.87	186	208	237	288	322	358	406	478	562	686
	1.87<= DSCR< 2.03	154	164	179	223	247	283	317	412	498	628
	2.03<= DSCR< 2.21	137	143	150	191	210	245	272	379	467	599
	2.21<= DSCR< 2.38	129	132	136	175	191	226	250	362	451	585
	DSCR>=2.38	125	127	128	167	182	217	239	354	443	577

The proposed multifamily credit risk capital grids provide for a straightforward determination of multifamily credit risk capital that is easy to interpret. In both multifamily credit risk capital grids, the credit risk capital requirement would increase as DSCR decreases (moving toward the top of a grid) and as LTV increases (moving toward the right of the grid). Thus, the Enterprises would generally be required to hold more capital for a multifamily whole loan or guarantee with a low DSCR and a high LTV (the upper-right corner of each grid) than for a multifamily whole loan or guarantee with a high DSCR and a low LTV (the lower-left corner of each grid).

The risk factor breakpoints and ranges represented in the multifamily credit risk capital grids were chosen following internal FHFA analysis and discussions with the Enterprises. After reviewing the distributions of the Enterprises' multifamily whole loan and guarantee unpaid principal balances (UPBs) across both dimensional risk factors (DSCR and LTV), FHFA concluded that the proposed breakpoints and ranges would combine to form sufficiently granular pairwise buckets without sacrificing simplicity or imposing an undue compliance burden on the Enterprises. Furthermore, for ease of interpretation and implementation, the proposed rule would contain one set of DSCR and LTV ranges for both newly acquired and seasoned whole loans and guarantees. However, as discussed, and as labeled on the grids, the risk factor dimensions would apply to acquisition DSCR and LTV for newly acquired whole loans and guarantees, and updated MTMDSCR and MTMLTV for seasoned whole loans and guarantees.

The proposed rule would require a unique treatment for interest-only (IO) loans. IO loans allow for payment of interest without any principal amortization during all or part of the loan term, creating increased amortization risk and additional leveraging

incentives for the borrower. To partially capture these increased risks, the proposed rule would require the Enterprises to use the fully amortized payment to calculate DSCR (or MTMDSCR) during the IO period in order to calculate base capital requirements using one of the two multifamily credit risk capital grids. Specifically, the proposed rule would require the Enterprises to assign each multifamily IO loan into a multifamily loan segment, either FRM or ARM, and to calculate a base credit risk capital requirement for each IO whole loan and guarantee using the corresponding segment-specific multifamily credit risk capital grid, where the DSCR (in the case of a new acquisition) or the MTMDSCR (in the case of a seasoned loan) is based on the IO loan's fully amortized payment.

Gross Credit Risk Capital Requirements

After the Enterprises calculate base credit risk capital requirements for multifamily whole loans and guarantees using the multifamily credit risk capital grids, the proposed rule would require the Enterprises to adjust these capital requirements to account for additional risk characteristics using a set of multifamily-specific risk multipliers. The proposed risk multipliers would refine multifamily base credit risk capital requirements for whole loans and guarantees that possess additional risk factors beyond those reflected in the dimensions of the multifamily credit risk capital grids, and would include considerations for both seasoned loans and new acquisitions. Accordingly, the Enterprises would apply these risk multipliers on top of the base credit risk capital requirements obtained from the multifamily credit risk capital grids. The proposed rule would include multipliers to capture variations in the following

multifamily loan characteristics: payment performance, interest-only, loan term, amortization term, loan size, and special products.

The proposed multifamily risk multipliers represent common characteristics that increase or decrease the riskiness of a particular multifamily whole loan or guarantee. The proposed rule would provide a mechanism through which multifamily credit risk capital requirements would be adjusted and refined up or down to reflect a more or less risky loan profile, respectively. FHFA believes that risk multipliers would provide for a simple and transparent characterization of the risks associated with different types of multifamily whole loans and guarantees, and an effective way of adjusting credit risk capital requirements for those risks. Although the specified risk characteristics are not exhaustive, they capture key commercial real estate loan performance drivers, and are common in commercial real estate loan underwriting and rating. Therefore, FHFA believes the use of risk multipliers in general, and the proposed multipliers in particular, would facilitate analysis of the Enterprises' multifamily credit risk capital requirements while mitigating concerns associated with compliance and complex implementation.

The proposed multifamily risk multipliers would capture variations in risk specific to individual whole loans and guarantees, and augment the base credit risk capital requirements. The numerical multipliers populating the multifamily risk multiplier table were determined using FHFA staff analysis and expertise, along with the Enterprises' contributions of model results and business expertise. Specifically, FHFA asked the Enterprises to run their multifamily credit models using the multifamily-specific stress scenario described above and synthetic loans with a baseline risk profile with respect to risk factors other than DSCR and LTV, in the same way the Enterprises

populated the multifamily credit risk capital grids. However, FHFA then asked the Enterprises to vary the additional risk factors to estimate the risk factors' multiplicative effects on the Enterprises' loss estimates (stress losses minus expected losses). In general, the multiplier values estimated by the Enterprises were consistent with one another in magnitude and direction. Using judgement, FHFA combined the estimates to determine the final multifamily risk multiplier values.

The proposed rule would require that multifamily whole loans and guarantees with characteristics similar to, and within a certain range of, the risk characteristics of the synthetic loans underlying the multifamily credit risk capital grids would take a multiplier of 1.0. Risk factor values dissimilar to the characteristics of the synthetic loans would be assigned risk multiplier values greater than or less than 1.0, such that the total risk multiplier applied to a given multifamily whole loan or guarantee could be above 1.0, below 1.0, or 1.0, depending on how the risk factor values compare to the pertinent risk factor values in the synthetic loans. A multiplier value above 1.0 would be assigned to risk factor values that represent riskier loan characteristics, while a multiplier value below 1.0 would be assigned to risk factor values that represent less risky characteristics. For each multifamily whole loan and guarantee, the individual risk multipliers would be multiplicative, and their product would be applied to the gross credit risk capital requirements determined by the multifamily credit risk capital grids.

The proposed multifamily risk multiplier values are presented in Table 28:

Table 28: Multifamily Risk Multipliers

Multifamily Risk Multipliers		
Risk Factor	Value or Range	Risk Multiplier
Payment Performance	Performing	1.00
	Delinquent	1.10
	Re-Performing (without Modification)	1.10
	Modified	1.20
Interest-Only	Not Interest-Only	1.00
	Interest-Only	1.10
Original/Remaining Loan Term	Loan Term <= 1Yr	0.70
	1Yr < Loan Term <= 2Yr	0.75
	2Yr < Loan Term <= 3Yr	0.80
	3Yr < Loan Term <= 4Yr	0.85
	4Yr < Loan Term <= 5Yr	0.90
	5Yr < Loan Term <= 7Yr	0.95
	7Yr < Loan Term <= 10Yr	1.00
	Loan Term > 10Yr	1.15
Original Amortization Term	Amort. Term <= 20Yr	0.70
	20Yr < Amort. Term <= 25Yr	0.80
	25Yr < Amort. Term <= 30Yr	1.00
	Amort. Term > 30Yr	1.10
Original Loan Size	Loan Size <= $3M	1.45
	$3m < Loan Size <= $5M	1.15
	$5m < Loan Size <= $10M	1.00
	$10m < Loan Size <= $25M	0.80
	Loan Size > $25M	0.70
Special Products	Government-Subsidized	0.60
	Not a Special Product	1.00
	Student Housing	1.15
	Rehab/Value-Add/Lease-Up	1.25
	Supplemental	Use FRM or ARM Capital Grid by adding supplemental UPB to the base loan and recalculating DSCR and LTV

Each multifamily risk factor represented in Table 28 can take multiple values, and each value or range of values has a risk multiplier associated with it. FHFA determined

these values and ranges after analyzing the Enterprises' multifamily portfolios and the associated distributions of UPBs, and subsequent to significant discussions both internally and with the Enterprises. FHFA believes that the proposed values and ranges would provide an appropriate level of granularity in the risk multiplier framework, both within each risk factor and cumulatively across risk factors, to sufficiently capture the variations in observable risk given the Enterprises' multifamily businesses and without imposing an undue compliance or implementation burden on the Enterprises. The risk factors in the multifamily risk multiplier table are:

- Payment performance. The payment performance risk multiplier captures risks associated with historical payment performance of whole loans and guarantees. In the proposed risk multiplier table, multifamily whole loans and guarantees would be assigned one of four values: performing, delinquent (defined as 30-days for multifamily whole loans and guarantees in the context of the proposed rule), re-performing (without modification), and modified. A performing loan is one that has never been delinquent in its payments; a delinquent loan is one that is not current in its payments at the time of the capital calculation; a re-performing loan is one that is current in its payments at the time of the capital calculation, but has been delinquent in its payments at least once since origination and has cured without modification; and a modified loan is one that is current in its payments at the time of the capital calculation, but has been modified at least once since origination or has gone through a workout plan. In the proposed rule, the Enterprises would be required to hold more capital for multifamily whole loans and guarantees that

have a delinquency and/or modification history than for those that do not. Specifically, performing whole loans and guarantees would receive a risk multiplier of 1.0, while delinquent, re-performing, and modified whole loans and guarantees would receive a risk multiplier greater than 1.0.

- Interest-only. The interest-only (IO) risk multiplier captures risks associated with IO whole loans and guarantees during the IO period. As discussed earlier, IO loans are generally considered riskier than non-IO loans, and the proposed rule would partially account for this increased amortization and leveraging risk by requiring the Enterprises to use fully amortized payments to calculate DSCR (for new acquisitions) and MTMDSCR (for seasoned loans) for use in the multifamily credit risk capital grids. The use of the amortized payment would lower the DSCR, resulting in a higher capital requirement all else equal. In addition, the proposed rule would further account for IO risk in the risk multiplier table. Specifically, non-IO whole loans and guarantees would receive a risk multiplier of 1.0, while IO whole loans and guarantees would receive a risk multiplier of 1.1 during the IO period.
- Original or remaining loan term. The loan term risk multiplier captures risks associated with the term of a multifamily whole loan or guarantee, either the original loan term for new acquisitions or the remaining loan term for seasoned loans. The majority of the Enterprises' multifamily whole loans and guarantees have a loan term of 5 years or longer, and in general, whole loans and guarantees with a shorter term are less risky than those with a longer term. Loans with shorter loan terms carry relatively less uncertainty about eventual

changes in property performance and future refinancing opportunities, while loans with longer loan terms carry relatively higher uncertainty about the borrower's ability to refinance in the future. In the proposed rule, a 10-year loan term would be considered a baseline risk, so whole loans and guarantees with a loan term between 7 years and 10 years would receive a risk multiplier of 1.0. The 7- to 10-year range represents a conservative range FHFA believes is appropriate. Whole loans and guarantees with loan terms shorter than 7 years would receive risk multipliers less than 1.0, and whole loans and guarantees with loan terms longer than 10 years would receive a risk multiplier greater than 1.0. Whole loans and guarantees that are new acquisitions would use the original loan term, while those that are seasoned would use the remaining loan term.

- Original amortization term. The amortization term risk multiplier captures risks associated with the amortization term of a multifamily whole loan or guarantee. In general, whole loans and guarantees with a shorter repayment period face less risk of a borrower defaulting on its payments than do those with a longer repayment period. The most common amortization term for multifamily whole loans and guarantees is 30 years, even though most have an original loan term with a balloon payment due earlier, often in 10 years. While amortization terms can potentially take any value, FHFA believes that given the very high number of whole loans and guarantees with an amortization term between 25 and 30 years, the values represented in the risk multiplier table would sufficiently account for the differences in risk

associated with amortization term. In the proposed rule, a 30-year amortization term would represent a baseline level of risk, and multifamily whole loans and guarantees with a 30-year amortization term would receive a risk multiplier of 1.0. Whole loans and guarantees with an amortization term less than 25 years would receive a risk multiplier less than 1.0, while whole loans and guarantees with an amortization term greater than 30 years would receive a risk multiplier of 1.1.

- Original loan size. Multifamily whole loans and guarantees with larger original loan balances are generally considered less risky than those with smaller balances, because larger balances are usually associated with larger investors with more access to capital and experience. In addition, the collateral securing a large loan is often a larger, more established, and/or newer property. Alternatively, whole loans and guarantees with smaller original balances are often associated with investors with limited funding and smaller, less competitive properties. In the proposed rule, an original loan size of $10 million represents a baseline level of risk, and multifamily whole loans and guarantees meeting that criterion would receive a risk multiplier of 1.0. Whole loans and guarantees with an original loan balance greater than $10 million would receive a risk multiplier less than 1.0, and whole loans and guarantees with an original loan balance less than $10 million would receive a risk multiplier greater than 1.0.
- Special products. The final risk factor in the multifamily risk multiplier table captures risks associated with certain special products. The special products

represented in the table contain risks unique to each product, and, while not exhaustive, were selected for their importance based on FHFA staff analysis and expertise and pursuant to discussions with the Enterprises and their collective multifamily business experiences. The special products, discussed individually below, are government subsidized, student housing, rehab/value-add/lease-up, and supplemental.

In the context of the proposed rule, multifamily whole loans and guarantees that are government-subsidized have financing that includes HUD or FHA subsidies. These subsidies could have value to an investor or to a renter, depending on the specific HUD or FHA program used, through their effect on the loan balance or on any tax credits related to the operation of the property supporting the loan. The benefits of these subsidies to investors and/or renters generally lead to property incomes that are less volatile than incomes associated with otherwise comparable whole loans and guarantees. Less volatile income broadly translates to lower risk, and as a result, government-subsidized whole loans and guarantees would be assigned a risk multiplier lower than 1.0.

Student housing loans provide financing for the operation of apartment buildings for college students. The rental periods for units in these properties often correspond with the institution's academic calendar, so the properties have a high annual turnover of occupants. Student renters, by and large, are not as careful with the use and maintenance of the rental units as more mature households. As a result, apartment buildings focusing on student housing customarily have more volatile occupancy and less predictable

maintenance expenses. In the proposed rule, this would imply higher risk, which would lead to a risk multiplier greater than 1.0 for student housing whole loans and guarantees.

The third type of special product in the risk multiplier table would include loans issued to finance rehab/value-add/lease-up projects. In the context of the proposed rule, rehab and value-add projects are different types of renovations, where a rehab project is a like-for-like renovation and a value-add project is one that increases a property's value by adding a new feature to an existing property or converts one component of a property into a more marketable feature, such as converting unused storage units into a fitness center. A lease-up property is one that is recently constructed and still in the process of securing tenants for occupancy. Recently built properties, and those subject to improvements, typically require more intense marketing efforts in the early stages of property operation. It often takes longer for these properties to reach and stabilize at reasonable occupancy levels. In the proposed rule, this would elevate the property's risk, which would lead to a risk multiplier greater than 1.0 for whole loans and guarantees backing these properties.

Finally, supplemental loans, in the context of the proposed rule, are multifamily loans issued to a borrower for a property for which the borrower has previously received a loan. There can be more than one supplemental loan. These loans, by definition, increase loan balances, which would lead to higher LTVs and could lead to lower DSCRs, which could lead to higher risk. Therefore, the proposed rule would require the Enterprises to account for this potentially higher risk by recalculating DSCRs and LTVs for the original and supplemental loans using combined loan balances and income/payment information, and calculating the capital requirement for a supplemental loan as the marginal increase in total capital due to the addition of the supplemental loan.

In practice, however, supplemental loans do not exist in a vacuum and the capital calculation for supplemental loans could be slightly more complicated than just described. For example, a higher loan balance due to a supplemental loan could push the total loan balance into a loan size bucket with a size multiplier smaller than it had before the supplemental was added, which could lower the overall credit risk capital requirement for the group of loans as a whole.

Multifamily Risk Multiplier Floor

In the proposed rule, multifamily risk multipliers would adjust base credit risk capital requirements in a multiplicative manner. As a result, combinations of overlapping characteristics could potentially result in an extremely low risk assessment of certain multifamily whole loans and guarantees, which would arguably undermine the conservative approach to capital requirements FHFA aims to take in the proposed rule. Thus, in the proposed rule, the Enterprises would be required to impose a floor of 0.5 to any combined multifamily risk multiplier calculation. This floor would ensure that combinations of overlapping characteristics would not result in potentially dangerous risk assessments, which is important since the proposed multipliers themselves are designed to represent the average behavior of loans with the associated multiplier characteristics.

Question 15: FHFA is soliciting comments on the proposed framework for calculating credit risk capital requirements for multifamily whole loans and guarantees, including comments on the loan segments, base grids, and risk multipliers. What modifications should FHFA consider and why?

Question 16: FHFA is soliciting comments on the proposed multifamily size multiplier and how it is applied to a loan's entire balance, rather than marginally to a

portion of a loan that exceeds a certain size threshold. What modifications to the multifamily size multiplier should FHFA consider and why?

Question 17: FHFA is soliciting comments on the proposed multifamily IO multiplier, and how it is applied to full-IO loans with no amortization term and IO loans that have seasoned beyond the IO period. What modifications to the proposed multifamily IO multiplier should FHFA consider and why?

Question 18: FHFA is soliciting comments on the proposed risk multiplier for government-subsidized multifamily whole loans, and how the proposed multiplier would be applied to all such multifamily whole loans. What modifications to the proposed multiplier for government-subsidized multifamily whole loans should FHFA consider and why?

Enterprise- and Ginnie Mae-Guaranteed Multifamily Mortgage-Backed Securities

There is no credit risk capital requirement in the proposed rule for multifamily MBS held in portfolio that were issued and guaranteed by an Enterprise or Ginnie Mae or are collateralized by Enterprise or Ginnie Mae multifamily whole loans or securities. Ginnie Mae securities are backed by the U.S. government and therefore do not have credit risk. For MBS issued by an Enterprise and later purchased by the same Enterprise for its portfolio, the credit risk is already reflected in the credit risk capital requirement on the underlying multifamily whole loans and guarantees (Section II.C.7.a). For MBS held by an Enterprise that were issued by the other Enterprise, there is counterparty risk. However, these holdings are typically small and, for reasons of simplicity, the proposed rule does not include a capital requirement for this exposure.

Question 19: Should multifamily MBS held by an Enterprise that were issued by the other Enterprise be subject to a counterparty haircut to reflect counterparty risk?

b. Credit Risk Transfer

This section corresponds to Proposed Rule §§ 1240.37 through 1240.38

The Enterprises often seek to reduce the credit risk on their multifamily guarantee books of business by transferring and sharing risk through multifamily Credit Risk Transfers (CRTs). In the proposed rule, the Enterprises would be able to reduce their multifamily credit risk capital requirements by engaging in CRTs. In the context of the proposed rule, multifamily capital relief would be the reduction in required credit risk capital afforded to the Enterprises from transferring all or part of a credit risk exposure using a multifamily CRT transaction. To calculate capital relief, the proposed rule would require the Enterprises to use a formulaic approach that accounts for counterparty credit risk on each CRT.

To date, the Enterprises have generally utilized two broad types of CRTs for their multifamily books of business: loss sharing and securitizations. Within these broad types, CRT transactions can have unique structures. The proposed approach is general enough to accommodate the variable nature of CRTs.

The first type of multifamily CRT transaction used by the Enterprises utilizes a loss sharing structure. In this type of CRT, which can be regarded as a front-end risk transfer with a vertical tranche, an Enterprise enters into a loss sharing agreement with a lender before the lender delivers the loan to the Enterprise. The Enterprise and lender share future losses according to a specified arrangement, commonly from the first dollar of loss, and in exchange the lender is compensated for the risk. For loss sharing CRT

transactions, the proposed capital relief would be a proportional share of the gross credit risk capital requirements implied by the underlying multifamily whole loans and guarantees. However, because these transactions are not necessarily fully collateralized, loss sharing CRTs generally expose the Enterprises to counterparty credit risk. Therefore, the proposed rule would reduce capital relief to account for counterparty credit risk.

The second type of multifamily CRT transaction used by the Enterprises utilizes a multiclass securitization structure. In this type of CRT, an Enterprise sells a pool of loans to a trust that securitizes cash flows from the pool into several tranches of bonds. The subordinated bonds, also called mezzanine and first-loss bonds, are sold to market participants. These subordinated bonds provide credit protection for the senior bond, which is the only tranche that is credit-guaranteed by the Enterprises. For securitization CRT transactions, the proposed rule would require that the Enterprises calculate capital relief using a step-by-step approach. To identify capital relief, the proposed approach would combine credit risk capital and expected losses on the underlying whole loans and guarantees, tranche structure, and ownership.

Multifamily Credit Risk Transfer Models

Under the loss sharing and securitization umbrellas, the Enterprises have generally used two distinct models. Fannie Mae's multifamily business has relied heavily on its Delegated Underwriting and Servicing (DUS) program, a loss sharing CRT program. Freddie Mac's multifamily business, in turn, has focused almost exclusively on securitizations, predominately through its K-Deal program.

Under the DUS program, Fannie Mae typically transfers about one-third of the credit risk per deal under a pari-passu DUS arrangement. Fannie Mae retains the remaining two-thirds of the credit risk plus the counterparty credit risk associated with the DUS lender business relationship. To offset the counterparty credit risk, the program requires lenders to post a certain amount of collateral, primarily in the form of restricted liquidity, which Fannie Mae can access in the event of lender default. The collateral, which for the purposes of restricted liquidity is treated uniformly in the proposed rule, includes Treasury money market funds, Treasury securities, and Enterprise MBS, and is currently marked-to-market on a monthly basis by a custodian. Fannie Mae currently has agreements with 25 lenders to deliver multifamily loans that meet the criteria specified in the DUS underwriting and servicing guidelines.

Freddie Mac, on the other hand, typically transfers credit risk by tranching pools of multifamily loans and selling unguaranteed bonds (mezzanine and subordinate) to private market participants. These sales, which generally account for 10 to 15 percent of the underlying loans, typically result in a transfer of more than 80 percent of the credit risk, and often result in a transfer of close to 100 percent of the credit risk. Freddie Mac, however, does assume credit and market risk during the period between loan acquisition and securitization. In addition, after securitization, Freddie Mac retains a portion of the credit risk through ownership and/or guarantee of senior K-Deal tranches.

Despite these differences in the Enterprises' multifamily business models, the proposed rule accommodates both Enterprises' lending practices.

Proposed Approach for Multifamily CRT Capital Relief

In general, the proposed approach would require four steps when calculating capital relief. In the first step, the Enterprises would distribute credit risk capital on the underlying whole loans and guarantees to the tranches of the CRT independent of tranche ownership, while controlling for expected losses. In practice, the Enterprises would allocate credit risk capital such that the riskiest, most junior tranches would be allocated capital before the most senior tranches.

In the second step, the Enterprises would calculate capital relief accounting for tranche ownership. The proposed approach would provide the Enterprises with capital relief from transferring all or part of a credit risk exposure. For each tranche or exposure, the Enterprises would identify the portion of the tranche owned by private investors or covered by a loss sharing agreement. Then, in general, the Enterprises would calculate the capital relief as the product of the credit risk capital allocated to the exposure and the portion of the tranche owned by private investors or covered by a loss sharing agreement.

However, this initial calculation of capital relief must be adjusted to account for counterparty credit risk because loss sharing agreements may be subject to counterparty credit risk. Capital relief afforded by credit risk transfers would be overstated absent such an adjustment.

In the third step, for loss sharing agreements, the Enterprises would apply haircuts to previously calculated capital relief to adjust for counterparty credit risk. In particular, the Enterprises would consider the credit worthiness of each counterparty when assessing the contribution of loss sharing arrangements such that the capital relief is lower for less credit worthy counterparties. At the same time, in the proposed approach, collateral posted by a counterparty would be considered when determining the counterparty credit

risk, as posted collateral would at least partially offset the effect of the counterparty exposure.

Lastly, the Enterprises would calculate total capital relief by adding up capital relief for each tranche in the CRT.

The proposed approach would afford relatively higher levels of capital relief to the riskier, more junior tranches of a CRT that are the first to absorb unexpected losses, and relatively low levels of capital relief to the most senior tranches. The approach would also afford greater capital relief for transactions that provide coverage: (i) on a higher percentage of unexpected losses, (ii) for a longer period of time, and (iii) with lower levels of counterparty credit risk.

Loss Sharing Approach

The distinguishing feature of the loss sharing CRT approach is the addition of a counterparty. To calculate capital relief under the loss sharing approach, the proposed rule would require the Enterprises to conduct a counterparty risk analysis in which the Enterprises would calculate counterparty exposure as per the loss sharing agreement, consider applicable restricted liquidity rules, determine if the counterparty has posted collateral, and assess the uncollateralized exposure to apply a haircut.

In the proposed rule, the counterparty haircut would be calculated using a modified version of the Basel Advanced IRB approach that takes into account the creditworthiness of the counterparty. Echoing the single-family discussion from Section II.C.4.a of how counterparty risk is amplified due to the correlation between a counterparty's credit exposure and the Enterprises' credit exposure (concentration risk), the proposed rule would assign larger haircuts to multifamily counterparties with higher

levels of concentration risk relative to diversified counterparties. The Enterprises would assess the level of multifamily mortgage risk concentration for each individual counterparty to determine whether the counterparty is well diversified or whether it has a high concentration risk, and counterparties with a lower concentration risk would be assigned a smaller counterparty haircut relative to counterparties with higher concentration risk. This difference is captured through the asset valuation correlation multiplier, AVCM. An AVCM of 1.75 would be assigned to counterparties with high concentration risk and an AVCM of 1.25 would be assigned to more well-diversified counterparties.

The proposed approach calculates the haircut by multiplying stress loss given default by stress probability of default and by a maturity adjustment for the asset. Along with the AVCM, other parameterization assumptions in the proposed rule include a stress LGD of 45 percent, a maturity adjustment calibrated to 5 years, a stringency level of 99.9 percent, and expected probabilities of default calculated using historical 1-year PD matrix for all financial institutions. The multifamily counterparty risk haircut multipliers are presented below in Table 29.

Table 29: Multifamily Counterparty Risk Haircut Multipliers by Concentration Risk

Counterparty Rating	CP Haircut for Concentration Risk: Not High	CP Haircut for Concentration Risk: High
1	2.1%	3.4%
2	5.3%	8.5%
3	6.0%	9.6%
4	12.7%	19.2%
5	16.2%	22.9%
6	22.5%	28.5%
7	41.2%	45.1%
8	48.2%	48.2%

The Enterprises would select a counterparty haircut from Table 29 and would apply the haircut to the uncollateralized exposure in a CRT. Further, if in the case of lender failure an Enterprise has contractual control of the lender's guarantee fee revenue, then the uncollateralized exposure would also be adjusted for lender guarantee fee revenue associated with the multifamily loan guarantee fees. In this lender loss sharing case, lender revenue would generally reduce the Enterprises' required counterparty credit risk capital. In particular, under the DUS framework, Fannie Mae has contracted with lenders to service the loans while retaining control of the servicing rights.

Securitization Approach

To calculate capital relief under the securitization approach, the proposed rule would require the Enterprises to analyze the levels of subordination involved in the securitization structure, and identify the portion of the tranches owned by private investors or covered by a loss sharing agreement. The Enterprises would then apply risk

transfer calculations that resemble those used for the single-family CRT transactions, with minor changes to some of the required parameters.

Other Multifamily CRT Considerations

The Enterprises may engage in other forms of CRT, which can be generally thought of as loss sharing with multiple tranches – vertical, horizontal, or both. These types of CRT could include back-end reinsurance coverage (*e.g.*, Fannie Mae's CIRT program), through which the Enterprises enter into an agreement with a third party (typically a lender) to cover first losses on a pool of loans up to a certain percentage. In the back-end reinsurance model, the Enterprises, as policy holders, typically retain some portion (or all) of the first loss on a pool of covered multifamily loans, and compensate the reinsurer directly. In this design, the Enterprises bear some counterparty credit risk. Accordingly, calculating capital relief for reinsurance CRT transactions in the proposed rule would require the Enterprises to determine the amount of transferrable capital and stress losses, allocate stress losses to each tranche in the deal, determine the losses owned by the reinsurers, and adjust the calculated capital relief for counterparty credit risk, including any reinsurer haircut or posted collateral. Under the top-loss approach, the Enterprises are responsible for losses after the counterparty pays the agreed top-loss coverage percentage. In this model, the Enterprises also bear counterparty risk, which requires an adjustment of the capital relief to account for counterparty credit risk.

In general, the Enterprises would calculate the multifamily CRT capital relief as the product of the credit risk capital allocated to the exposure and the portion of the tranche owned by private investors or covered by a loss sharing agreement. The Enterprise would then adjust capital relief for counterparty credit risk, if applicable. The

proposed approach implies that the CRT provides loss coverage through the entire duration of the loans subject to risk transfer. This includes the period at which a balloon payment, if the loan involves one, is due. If multifamily CRT coverage expires before the underlying loans mature, then capital relief afforded by the multifamily CRT may be overstated absent such a loss timing adjustment. However, because multifamily loans typically include a balloon payment, it is assumed that CRT coverage includes all potential losses including those associated with the borrower's failure to make the balloon payment.

Seasoned CRT Capital Calculations

In the proposed rule, the Enterprises would need to recalculate post-deal CRT capital on seasoned multifamily CRT transactions.

Fannie Mae's current risk transfer method (the DUS program) largely involves proportional front-end loss-sharing. In the proposed rule, for each group of loans that have been acquired through a loss-sharing transaction, including Fannie Mae's DUS program, the Enterprises would recalculate capital relief to reflect changes in restricted liquidity and counterparty exposure.

The majority of Freddie Mac's current risk transfer method involves structured securitizations through the K-deal program. Prepayment penalty structures, including defeasance, that prevent unpaid balances from changing significantly are often part of multifamily structured securitizations. These situations limit the effect of updating and recalculating the post-deal CRT capital. Nevertheless, in anticipation of future growth in multifamily CRT activities, the proposed rule would establish guidelines for post-deal CRT capital reporting.

In the proposed rule, for each group of loans remaining in a securitization CRT transaction, including those in Freddie Mac's K-deals, the Enterprises would recalculate capital relief by aggregating the updated loan-level capital requirements for each pool to determine how much capital is effectively transferred through the CRT at the time of the update. For each deal, the Enterprises would be required to update asset fundamentals that may affect the amount of expected or unexpected losses associated with the deal, as well as any potential changes in the deal's loan balances as a result of voluntary or involuntary terminations, including prepayments within or outside any applicable prepayment penalty period. In addition, for each tranche, the Enterprises would be required to update which parties are responsible for changes in a given tranche's exposure. A deal may involve different forms of credit enhancements in addition to the typical senior-subordinated structure (*e.g.*, retention, insurance, re-insurance). This step would require the Enterprises to consider changes to risk exposure due to changes in expected or unexpected losses associated with the deal and any potential changes in UPB following voluntary or involuntary terminations, including prepayments within or outside any applicable prepayment penalty period.

Question 20: FHFA is soliciting comments on the proposed approaches for calculating multifamily CRT capital relief. What modifications should FHFA consider and why?

Question 21: Should the proposed multifamily CRT formulae differentiate the capital relief allowed in CRT transactions with low loan counts from that allowed in CRT transactions with high loan counts?

Question 22: FHFA is soliciting comments on multifamily counterparty haircuts. What modifications should FHFA consider and why?

Question 23: FHFA is soliciting comments on whether CRT loss timing should be accounted for in measuring CRT capital relief. What modifications should FHFA consider and why?

c. Market Risk

This section corresponds to Proposed Rule §§ 1240.39 through 1240.40

Multifamily Whole Loans and Guarantees

Multifamily whole loans held in the Enterprises' portfolios have market risk stemming from changes in value due to movements in interest rates and credit spreads. As the Enterprises currently hedge interest rate risk closely at the portfolio level, the market risk capital requirements in the proposed rule would focus on spread risk.

The proposed rule would require the Enterprises to calculate market risk capital requirements on fixed- and adjustable-rate multifamily whole loans using a spread duration approach, which relies, in part, on the Enterprises' internal models.

For the spread duration approach in the proposed rule, the Enterprises would calculate market risk capital as the product of a spread shock and spread duration. The proposed rule would include a specified spread shock and require an Enterprise to use its internal models to estimate spread durations.

Capital results that rely on internal model calculations can be opaque and result in different capital requirements across Enterprises for the same or similar exposures. Hence, the proposed rule would partly rely on an Enterprise's internal models only when

the market risk complexity is sufficiently high that using a single point estimate would inadequately represent the exposure's underlying multifamily market risk.

Notably, internal models used in the determination of multifamily market risk capital requirements would be subject to ongoing supervisory review. As an example, an Enterprise's model risk management is subject to FHFA's 2013-07 Advisory Bulletin.

The market risk capital requirement for the Enterprises' multifamily fixed- and adjustable- rate whole loans would be the product of a defined credit spread shock (15 bps) and the spread duration, calculated individually by the Enterprises using each Enterprise's internal models. For a given multifamily whole loan, the product of the spread shock and the spread duration would then be multiplied by the market value of the asset to compute the market risk capital requirement in dollars. The proposed 15 basis point spread duration assumes strong historical multifamily market performance, high multifamily whole loan liquidity, and low cash flow pricing sensitivity to changes in interest rate spreads.

Question 24: FHFA is soliciting comments on the proposed approach for calculating market risk capital requirements for multifamily whole loans. What modifications should FHFA consider and why?

Enterprise- and Ginnie Mae- Guaranteed Multifamily Mortgage-Backed Securities

Enterprise- and Ginnie Mae-guaranteed multifamily MBS held in the Enterprises' portfolios have market risk stemming from changes in value due to movements in interest rates and credit spreads. As discussed in Section II.C.6.c with regard to the market risk capital requirements for multifamily whole loans, the Enterprises currently hedge interest

rate risk closely at the portfolio level, and therefore the market risk capital requirements in the proposed rule would focus on spread risk.

In the proposed rule, the market risk capital requirement for Enterprise- and Ginnie Mae-guaranteed multifamily MBS would be determined using a spread duration approach, which would rely, in part, on the Enterprises' internal models. For the spread duration approach in the proposed rule, the Enterprises would calculate market risk capital as the product of a spread shock and spread duration. The proposed rule would include a specific spread shock and require an Enterprise to use its internal models to estimate spread durations.

The use of internal models would allow the Enterprises to more frequently update spread durations to reflect market changes. However, capital results that rely on internal model calculations can be opaque and result in different capital requirements across Enterprises for the same or similar exposures. Hence, the proposed rule would partly rely on an Enterprise's internal models only when the market risk complexity is sufficiently high that using a single point estimate inadequately represents the exposure's underlying multifamily market risk.

Notably, internal models used in the determination of multifamily market risk capital requirements would be subject to ongoing supervisory review. As an example, an Enterprise's model risk management is subject to FHFA's 2013-07 Advisory Bulletin.

The market risk capital requirement for Enterprise- and Ginnie Mae-guaranteed multifamily MBS would be the product of a defined credit spread shock (100 bps) and the spread duration calculated individually by the Enterprises using each Enterprise's internal models. The proposed 100 basis point spread shock reflects a combination of the

Enterprises' estimates, and is driven by the complexity of structured products relative to whole loans which could decrease liquidity and increase cash flow pricing sensitivity to changes in interest rate spreads.

Question 25: FHFA is soliciting comments on the proposed approach for calculating risk-based capital requirements for Enterprise and Ginnie Mae multifamily MBS. What modifications should FHFA consider and why?

d. Operational Risk

This section corresponds to Proposed Rule §§ 1240.41 through 1240.42

As described in section II.C.2 above, the proposed rule would establish an operational risk capital requirement of 8 basis points for all assets. For multifamily whole loans and guarantees, and Enterprise and Ginnie Mae multifamily MBS, the operational risk capital requirement would be 8 basis points of the unpaid principal balance of assets with credit risk or 8 bps of the market value of assets with market risk

e. Going-Concern Buffer

This section corresponds to Proposed Rule § 1240.44

As described in section II.C.3 above, the proposed rule would establish a going-concern buffer of 75 basis points for all assets. For multifamily whole loans and guarantees, and Enterprise and Ginnie Mae multifamily MBS, the going-concern buffer would be 75 basis points of the unpaid principal balance of assets with credit risk or 75 basis points of the market value of assets with market risk.

f. Impact

Table 30: Fannie Mae and Freddie Mac Combined Estimated Total Risk-Based Capital Requirements for Multifamily Whole Loans, Guarantees, and Related Securities as of September 30, 2017

	Capital Requirement		
	$billions	bps	Share, %
Net Credit Risk	$16.5		
Credit Risk Transferred	($8.0)		
Post-CRT Net Credit Risk	$8.5	171	61%
Market Risk	$1.3	25	9%
Going-Concern Buffer	$3.7	74	27%
Operational Risk	$0.4	8	3%
Total Capital Requirement	$13.9	278	100%
Total UPB, $billions	$499.6		

Table 31: Fannie Mae and Freddie Mac Combined Estimated Credit Risk Capital Requirements for Multifamily Whole Loans and Guarantees as of September 30, 2017 – by Loan Category*

	Capital Requirement, $billions	UPB, $billions	Capital Requirement, bps
New Originations	$1.9	$42	449
Performing Seasoned Loans	$14.6	$449	325
Non-Performing Loans	$0.0	$1	511
Net Credit Risk	$16.5	$492	336
Credit Risk Transferred	($8.0)		
Post-CRT Net Credit Risk	$8.5	$492	174

***** *Excludes both Enterprises' retained portfolio holdings of MBS guaranteed by the other Enterprise, and Ginnie Mae MBS.*

7. Commercial Mortgage-Backed Securities

This section corresponds to Proposed Rule § 1240.46

Credit Risk and Market Risk

In the proposed rule, the capital requirement for multifamily commercial mortgage-backed securities (CMBS) held by the Enterprises that are not guaranteed by an Enterprise or by Ginnie Mae would be a single 200 basis point requirement that accounts

for both credit and market risk. The 200 basis point requirement reflects a combination of the Enterprises' internal model estimates. FHFA chose this approach based on internal staff analysis and discussions with the Enterprises. FHFA believes this simple approach is justified given the small, and shrinking, non-Enterprise and non-Ginnie Mae CMBS portfolios held by the Enterprises.

Operational Risk

As described in section II.C.2 above, the proposed would require the Enterprises to hold an operational risk capital requirement of 8 bps for all assets. For multifamily CMBS held by the Enterprises that were not issued by the Enterprises or by Ginnie Mae, the operational risk capital requirement would be 8 bps of the securities' market value.

Going-Concern Buffer

As described in section II.C.3 above, the proposed rule uses a going-concern buffer of 75 bps for all assets. For multifamily CMBS held by the Enterprises that were not issued by the Enterprises or by Ginnie Mae, the going-concern buffer would be 75 bps of the securities' market value.

Impact

Table 32: Fannie Mae and Freddie Mac Combined Estimated Risk-Based Capital Requirements for Commercial Mortgage-Backed Securities as of September 30, 2017

	Capital Requirement		
	$billions	bps	Share, %
Credit Risk and Market Risk	$0.013	197	71%
Going-Concern Buffer	$0.005	74	27%
Operational Risk	$0.001	8	3%
Total Capital Requirement	$0.018	279	100%
Total UPB, $billions	$0.656		

Question 26: FHFA is soliciting comments on the proposed approach for calculating risk-based capital requirements for CMBS. What modifications should FHFA consider and why?

8. Other Assets and Guarantees

This section corresponds to Proposed Rule § 1240.47

This section describes the proposed rule for certain assets and guarantees that are not covered by the Enterprises' core business activities. This section also describes the proposed rule for new products that are not covered in the proposed rule.

For assets with credit risk exposure, the proposed rule defines credit risk capital requirements. The proposed rule allows the Enterprises to use internal methodologies to calculate market risk capital requirements for other assets and guarantees.

Deferred Tax Assets

The proposed rule would establish a risk-based capital requirement for deferred tax assets (DTAs) that would offset the DTAs included in core capital in a manner generally consistent to the Basel III treatment of DTAs. DTAs are recognized based on the expected future tax consequences related to existing temporary differences between the financial reporting and tax reporting of existing assets and liabilities given established tax rates. In general, DTAs are considered a component of capital because these assets are capable of absorbing and offsetting losses through the reduction to taxes. However, DTAs may provide minimal to no loss-absorbing capability during a period of stress as recoverability (via taxable income) may become uncertain.

In 2008, during the financial crisis, both Enterprises recognized a valuation allowance to reduce their DTAs to amounts that were more likely than not to be realized

based on the facts that existed at the time and estimated future taxable income. A valuation allowance on DTAs is typically recognized when all or a portion of DTAs is unlikely to be realized considering projections of future taxable income. The recognition of the valuation allowances on DTAs resulted in non-cash charges to income and reductions to the Enterprises' net DTA balances (included in the retained earnings components of capital). Fannie Mae established a partial valuation allowance on DTAs of $30.8 billion in 2008, which was a major contributor to the overall capital reduction of $66.5 billion at Fannie Mae in 2008. Similarly, Freddie Mac established a partial valuation allowance on DTAs of $22.4 billion in 2008, which was also a major contributor to the overall capital reduction of $71.4 billion at Freddie Mac in 2008.

Other financial regulators recognize the limited loss absorbing capability of DTAs, and therefore limit the amount of DTAs that may be included in Common Equity Tier 1 (CET1) capital. Under Basel III guidance, certain DTAs are excluded from CET1, while other DTAs are included in CET1 capital up to a cap of 10 percent of CET1 capital. Most other DTAs are included in risk-weighted assets.

Given the Enterprises' experiences with DTAs during the financial crisis, FHFA would like to limit the amount of DTAs counted as capital, similar to the limitations of the other financial regulators. However, FHFA does not have the authority to change the statutory definition of core capital for the Enterprises. The proposed rule would instead adopt a modified version of the Basel III treatment whereby DTA amounts that would be deducted from CET1 under Basel are included in the risk-based capital requirement. The result of this modification would be to neutralize the impact of DTAs on Enterprise capital to the same degree that the Basel framework limits the amount of DTAs included

in CET1. Similarly, DTA amounts included in risk weighted assets under Basel would also be included in the risk-based capital requirement. Specifically, the risk-based capital requirement for DTAs would be the sum of:

- 100 percent of DTAs that arise from net operating losses and tax credit carryforwards, net of any related valuation allowances and net of deferred tax liabilities (DTLs);
- 100 percent of DTAs arising from temporary differences that could not be realized through net operating loss carrybacks, net of related valuation allowances and net of DTLs that exceed 10 percent of adjusted core capital;[41]
- 20 percent (8 percent x 250 percent) of DTAs arising from temporary differences that could not be realized through net operating loss carrybacks, net of related valuation allowances and net of DTLs that do not exceed 10 percent of adjusted core capital; and
- 8 percent of DTAs arising from temporary differences that could be realized through net operating loss carrybacks, net of related valuation allowances and net of DTLs.

The capital requirement for DTAs is highly sensitive to the amount of core capital held by an Enterprise. While the Enterprises currently have negative core capital, Table 33 below shows the impact of the proposed DTA treatment for the third and fourth quarters of 2017, assuming the Enterprises held core capital equal to the risk-based capital requirement (before DTAs), in order to show the DTA impact on a post-

[41] Adjusted core capital is core capital, per the statute, less DTAs that arise from net operating losses and tax credit carryforwards, net of any related valuation allowances and net of deferred tax liabilities.

conservatorship basis. The fourth quarter impact is significantly lower due to the reduction in DTAs because of the Tax Cuts and Jobs Act of 2017.

Table 33: Fannie Mae and Freddie Mac Estimated Risk-Based Capital Requirements for Deferred Tax Assets Assuming Core Capital Equal to Risk-Based Capital Requirement*

	As of September 30, 2017 (in $billions)			As of December 31, 2017 (in $billions)		
	Fannie Mae	Freddie Mac	Total	Fannie Mae	Freddie Mac	Total
Category 1	$2.5	$1.4	$3.9	$2.5	-	$2.5
Category 2	$15.3	$4.0	$19.3	$5.6	-	$6.6
Category 3	$1.9	$1.2	$3.0	$1.8	$0.9	$1.8
Category 4	$0.3	$0.3	$0.5	-	$0.3	$0.3
Total Capital Requirement	$19.9	$6.8	$26.8	$10.0	$1.2	$11.2

*The DTA capital requirement is a function of Core Capital. Both Enterprises have negative Core Capital as of September 30, 2017 and December 31, 2017. In order to calculate the DTA capital requirement, we assume Core Capital is equal to the Risk-Based Capital Requirement without consideration of the DTA capital requirement.
Category 1: 100 percent of DTAs arising from net operating losses and tax credit carryforwards, net of any related valuation allowances and net of DTLs.
Category 2: 100 percent of DTAs arising from temporary differences that could not be realized through net operating loss carry backs, net of related valuation allowances and net of DTLs that exceed 10 percent of adjusted core capital. Adjusted core capital is core capital, per the statute, less DTAs that arise from net operating losses and tax credit carryforwards, net of any related valuation allowances and net of deferred tax liabilities.
Category 3: 20 percent of DTAs arising from temporary differences that could not be realized through net operating loss carrybacks, net of related valuation allowances and net of DTLs that do not exceed 10 percent of adjusted core capital.
Category 4: 8 percent of DTAs arising from temporary differences that could be realized through net operating loss carrybacks, net of related valuation allowances and net of DTLs.

Table 34 shows the impact of the proposed DTA treatment with the Enterprises' actual negative core capital in the third and fourth quarters of 2017.

Table 34: Fannie Mae and Freddie Mac Estimated Risk-Based Capital Requirements for Deferred Tax Assets Assuming Core Capital as of September 30, 2017

	As of September 30, 2017 (in $billions)			As of December 31, 2017 (in $billions)		
	Fannie Mae	Freddie Mac	Total	Fannie Mae	Freddie Mac	Total
Category 1	$2.5	$1.4	$3.9	$2.5	-	$2.5
Category 2	$24.5	$9.8	$34.3	$14.8	$4.7	$19.6
Category 3	-	-	-	-	-	-
Category 4	$0.3	$0.3	$0.5	-	$0.3	$0.3
Total Capital Requirement	$27.3	$11.5	$38.8	$17.4	$5.0	$22.4

Municipal Debt

Municipal debt is debt securities issued by states, local governments, or state agencies such as state housing finance agencies. As municipal debt generally has minimal default risk, the proposed rule would assign a zero credit risk capital requirement to municipal debt. The proposed rule would assign a market risk capital requirement of 760 bps, an operational risk capital requirement of 8 bps, and a going-concern buffer of 75 bps to municipal debt. The 760 basis point market risk capital requirement reflects a combination of the Enterprises' internal model estimates.

The proposed rule would use the single point estimate approach to market risk for a number of reasons. Municipal debt is a shrinking component of the Enterprises' portfolios. A more complicated approach would not be warranted, as it would not result in a material change to the Enterprises' overall capital position. Municipal debt has a simple market risk profile due to the absence of a prepayment option. Additionally, the credit spread for municipal debt is stable across maturities. The single point estimate for market risk capital represents the average of estimates from the Enterprises.

Reverse Mortgages and Reverse Mortgage Securities

The proposed rule would not subject reverse mortgages and securities backed by reverse mortgages to a credit risk capital requirement due to Federal Housing Administration insurance on the mortgages. The proposed rule would assign a market risk capital requirement of 500 bps to reverse mortgages and 410 bps to reverse mortgage securities, an operational risk capital requirement of 8 bps to reverse mortgages and reverse mortgage securities, and a going-concern buffer of 75 bps to reverse mortgages and reverse mortgage securities. The 500 and 410 basis point market risk capital requirements reflect Fannie Mae's internal model estimates since Freddie Mac did not own reverse mortgages.

The rationale for applying the single point estimate approach to market risk for reverse mortgages and reverse mortgage securities is that (i) these assets are a shrinking component of the Enterprises' portfolios and (ii) these assets have low and stable market risk resulting from low prepayment sensitivity. In particular, for reverse mortgages, refinance is rare and not driven by changes in interest rates. As a result, market value on reverse mortgages and reverse mortgage securities is relatively insensitive to prepayment.

Cash and Cash Equivalents

Cash and cash equivalents are highly liquid investment securities that have a maturity at the date of acquisition of three months or less and are readily convertible to known amounts of cash. The proposed rule would assign a zero credit risk capital requirement and a zero market risk capital requirement to cash and cash equivalents as they are not subject to default and market risks. Further, cash and cash equivalents would receive a zero operational risk capital requirement and a zero going-concern buffer.

Single-Family Rentals

The proposed rule would include a credit risk capital requirement for single-family rentals. Single-family rentals are multiple income-producing single-family units owned by an investor for the purpose of renting them and deriving a profit from their operation. The concept of single-family rentals has been traditionally associated with individual-investor single-family units, which are usually covered under the single-family framework and include either single or two-to-four unit assets. However, the single-family rental market also includes investors that own portfolios of more than ten units, and sometimes up to thousands of units across different cities. The Enterprises have explored and have already executed deals on this type of assets.

Although this type of multi-unit ownership cannot be defined as a typical multifamily investment, the income-producing nature would allow the Enterprises to evaluate them as a traditional multifamily investment for the purpose of estimating capital. To do so would require the Enterprises to calculate a DSCR and LTV on the portfolio of single-family rentals, which is a relatively simple calculation once income and values for every property are available. The proposed rule would require the Enterprises to calculate DSCR and LTV in this manner for this type of single-family rental deals, and to subsequently calculate base credit risk capital requirements using the appropriate multifamily FRM or ARM base credit risk capital grid.

Impact

Table 35: Fannie Mae and Freddie Mac Combined Estimated Risk-Based Capital Requirements for Other Assets as of September 30, 2017

	Capital Requirement		
	$billions	bps	Share, %
Credit Risk	$2.1	64	6%
Market Risk	$2.9	88	9%
Going-Concern Buffer	$1.2	36	4%
Operational Risk	$0.1	4	0%
Other (DTA)	$26.8	811	81%
Total Capital Requirement	$33.1	1,002	100%
Total UPB, $billions	$330.0		

Question 27: FHFA is soliciting comments on the proposed approaches for calculating risk-based capital requirements for other assets and guarantees. What modifications should FHFA consider and why?

9. Unassigned Activities

This section corresponds to Proposed Rule § 1240.48

Given the continuing evolution and innovation in the financial markets, FHFA recognizes that the Enterprises could continue to develop and purchase new products and engage in other new activities.

The proposed rule would require an Enterprise to provide written notice of an Unassigned Activity, which includes any asset, guarantee, off-balance sheet guarantee, or activity for which the proposed rule does not have an explicit risk-based capital treatment. An Enterprise must provide a proposed capital treatment along with sufficient information about the Unassigned Activity for FHFA to understand the risks and benefits of the activity. The proposed rule would require FHFA to analyze the Unassigned Activity and to provide the Enterprise with written notice of the appropriate capital treatment. If FHFA does not provide the Enterprise with written notice of a treatment in time for the Enterprise to prepare its quarterly capital report, the proposed rule would

require an Enterprise to use its proposed capital treatment to determine an interim capital requirement. FHFA will monitor the Enterprises' activities and when appropriate propose amendments to this regulation addressing the treatment of activities that do not have an explicit risk-based capital treatment.

Given the dynamics of the marketplace and the Enterprises' business, it is not possible to construct a regulation that specifies a detailed treatment for every new type of instrument or capture every new type of risk that might emerge from quarter to quarter. It will not always be possible for FHFA to analyze and determine an appropriate treatment for a new asset or activity in time for an Enterprise to file its capital report, either due to the timing of the notice from the Enterprise or due to the complexity of the new product or activity. The proposed rule strikes a balance between accuracy and timeliness by requiring FHFA to determine the appropriate long-term treatment of an Unassigned Activity, while allowing the Enterprises to use their internal models on an interim basis.

D. Minimum Leverage Capital Requirements

This section corresponds to Proposed Rule § 1240.50

Overview

The proposed rule includes two alternative minimum leverage capital requirement proposals for public comment. Under the first approach, the Enterprises would be required to hold capital equal to 2.5 percent of total assets (as determined in accordance with GAAP) and off-balance sheet guarantees related to securitization activities, regardless of the risk characteristics of the assets and guarantees or how they are held on the Enterprises' balance sheets (the "2.5 percent alternative"). Under the second

approach, the Enterprises would be required to hold capital equal to 1.5 percent of trust assets and 4 percent of non-trust assets (the "bifurcated alternative"), where trust assets are defined as Fannie Mae mortgage-backed securities or Freddie Mac participation certificates held by third parties and off-balance sheet guarantees related to securitization activities, and non-trust assets are defined as total assets as determined in accordance with GAAP plus off-balance sheet guarantees related to securitization activities minus trust assets. The Enterprises' retained portfolios would be included in non-trust assets.

The considerations for the two alternative approaches to the minimum leverage capital requirement in the proposed rule are discussed below, followed by a more detailed discussion of each alternative. FHFA seeks feedback from commenters on both alternatives to the minimum leverage capital requirement.

Considerations for Establishing an Updated Minimum Leverage Capital Requirement

Establishing an updated minimum leverage capital requirement is an important component of the proposed regulatory capital requirements for the Enterprises. While FHFA believes that the proposed risk-based capital requirements included in this rulemaking reflect a detailed and robust assessment of risk to Fannie Mae and Freddie Mac, FHFA also believes that it is appropriate and prudent to establish a backstop to guard against the potential that the risk-based requirements underestimate the risk of an Enterprises' assets. The Safety and Soundness Act authorizes FHFA to set a higher leverage ratio than the minimum required by the statute, and this proposed rule, under either of the proposed alternatives, would do so.

In considering both the need for and the structure of an updated minimum leverage capital requirement, FHFA has taken into consideration how to best set the

minimum leverage requirement as a backstop to the proposed risk-based capital framework. These considerations include the model risk associated with any risk-based measure, the pro-cyclicality of using mark-to-market LTV ratios in the proposed risk-based capital requirement, the funding risks of the Enterprises' business, and the impact of having a leverage ratio serve as the binding capital constraint. Each of these considerations is discussed below.

First, because risk-based capital requirements are subject to a number of assumptions and can change over time, a minimum leverage requirement can serve as a backstop in the event that risk-based requirements become too low. As discussed earlier, risk-based capital frameworks depend on models and, thus, are subject to the risk that the applicable model will underestimate or fail to address a developing risk. In particular, new activities, given their lack of historical performance data, are subject to significant uncertainty. As a result, any models that assess new activities may under-predict risk.

Second, a leverage requirement can serve as a backstop because the proposed risk-based capital requirements are pro-cyclical, while a leverage requirement is risk-invariant. Because the proposed risk-based requirements use mark-to-market LTVs for loans held or guaranteed by the Enterprises in determining capital requirements, as home prices appreciate and LTVs consequently fall, the Enterprises would be allowed to release capital. In this context, a minimum leverage capital requirement could mitigate the amount of capital released as risk-based capital levels fell below the applicable leverage requirement. The housing market can be highly cyclical and downturns are often preceded by rapid and unsustainable home price appreciation, resulting in the

potential for the Enterprises to release capital ahead of a downturn when their access to the capital markets may be constrained.

In addition to the two minimum capital requirement alternatives included in this proposed rule, FHFA also has the authority to temporarily increase the Enterprises' leverage requirements through order or regulation to address pro-cyclical or other concerns about the Enterprises' capital levels. It is also important to note that, separate from the leverage requirement proposals discussed in this section, FHFA's authority to address pro-cyclicality concerns also includes tools on the risk-based capital requirements proposed in this rule. Specifically, as is discussed in section II.F, FHFA could make upward adjustments by regulation or order to the risk-based capital requirements under the provisions of the Safety and Soundness Act to take into account changing economic conditions, such as rising house prices and asset levels, and to adjust the risk-based capital requirements for specified products or activities.

Third, ensuring a sufficient minimum leverage capital requirement could also address the funding risks of the Enterprises' business activities. Both in the single-family and multifamily mortgage-backed security guarantee business lines, investors provide the Enterprises a stable source of funding that is match-funded with the mortgage assets that Fannie Mae and Freddie Mac purchase and hold in trust accounts. While these mortgage assets are reflected on the balance sheets of the Enterprises and represent the vast majority of their assets, the funding for these assets has already been provided and cannot be withdrawn during times of market stress.

As discussed previously, this stable funding for trust assets is in contrast to the banking deposits and short-term debt that banks rely on, which could become unavailable

during a stress event and force a rapid and disorderly sale of assets into a declining market. While the securitization process does not transfer credit risk from the Enterprises, Fannie Mae and Freddie Mac also currently engage in significant credit risk transfer transactions that transfer a substantial portion of credit risk to private investors. As a result of both their securitization funding and credit risk transfer practices, the risk profile of Enterprise assets held in trusts differs markedly from mortgage assets held by depository institutions.

In contrast, however, the Enterprises' retained portfolio assets do pose funding risk to Fannie Mae and Freddie Mac. These retained portfolio assets must be funded in much the same way that bank assets are generally funded, through the issuance of debt. During conservatorship, Enterprise retained portfolio asset levels have declined considerably since the financial crisis, and the majority of the Enterprises' recent portfolio asset purchases support their core credit guarantee business, in particular the purchase of mortgages via their respective cash windows for aggregation purposes and the repurchase of mortgages out of securitizations for purposes of loss mitigation. The amount of Enterprise legacy assets held for investment has been reduced significantly during conservatorship. The reduction of the Enterprises' retained portfolios is required by limits imposed by the PSPAs and also furthers the conservatorship objectives of reforming the Enterprises' business models and reducing their volume of non-credit-guarantee-related investments and illiquid assets.

Fourth, in setting the minimum leverage capital requirement as a backstop capital measure, FHFA is also considering the potential adverse impact of having the leverage requirement exceed the risk-based requirement and become the binding capital constraint

for the Enterprises. Because a leverage requirement is designed to be risk-insensitive, a binding leverage requirement could influence Enterprise decision-making in ways that encourage risk-taking. For instance, during periods of rising home prices, leverage requirements could exceed risk-based capital requirements and this could reduce an Enterprise's economic incentive to differentiate among the relative riskiness of different mortgages. A binding leverage requirement could also reduce an Enterprise's incentive to enter into credit risk transfer transactions.

The two alternatives included in this proposed rule offer different methodologies for establishing the Enterprises' minimum leverage capital requirement, and these methodologies reflect different considerations and trade-offs in weighing the factors discussed above. FHFA requests feedback on how best to balance the benefits of a leverage requirement that would serve as a backstop to the proposed risk-based capital requirements and therefore mitigate the risk that risk-based requirements would be insufficient, with the downsides of a leverage requirement that could influence how the Enterprises evaluate risk.

Asset Base

In the proposed rule, each minimum leverage capital alternative would be applied to total assets as determined in accordance with GAAP and off-balance sheet guarantees related to securitization activities. This would differ from the approach used by commercial banks that are subject to multiple leverage ratio requirements, some of which exclude off-balance sheet items from the asset base. For both the 2.5 percent alternative and the bifurcated alternative, FHFA believes it is appropriate, and generally consistent with the Safety and Soundness Act's capital requirements and the Supplementary

Leverage Ratio for banks, to include off-balance sheet guarantees as part of the minimum leverage capital requirement to ensure that these risks are capitalized.

Consistent with the treatment in bank capital regulations and the Safety and Soundness Act, FHFA includes cash and cash equivalents in the asset base for both the 2.5 percent alternative and the bifurcated alternative for the minimum leverage capital requirement. Under the bifurcated alternative, cash and cash equivalents would be treated as a non-trust asset and receive a 4 percent leverage requirement. Cash and cash equivalents are highly liquid investment securities that have a maturity at the date of acquisition of three months or less and are readily convertible to known amounts of cash. However, cash and cash equivalents remain subject to funding risk in much the same way as other Enterprise portfolio assets. While securitized mortgage assets benefit from matched funding in the Enterprises' single-family and multifamily business lines, funding for short-term, even highly liquid, assets, must be separately obtained. Therefore, FHFA is proposing to include cash and cash equivalents in the asset base for the minimum leverage capital requirement under both of the alternatives included in this proposed rulemaking.

The 2.5 Percent Minimum Leverage Capital Requirement Alternative

FHFA's first proposed alternative for a minimum leverage capital requirement would establish a single leverage requirement of 2.5 percent of total assets (as determined in accordance with GAAP) and off-balance sheet guarantees related to securitization activities, which is referred to here as the 2.5 percent alternative. This compares to the current minimum leverage capital requirement, set by statute, of 2.5 percent of retained

portfolio assets, 0.45 percent of mortgage-backed securities outstanding to third parties, and 0.45 percent of other off-balance sheet obligations.

The 2.5 percent alternative would set the proposed threshold based on a number of analyses that are designed to supplement the total proposed risk-based capital framework in identifying the minimum capital that would be required to fund all of an Enterprise's assets through economic and credit cycles, and therefore minimize the probability that the Enterprises would again require public support. The proposed risk-based capital requirements are pro-cyclical in that the capital requirements decrease in favorable economic scenarios and increase in stress economic scenarios. In the absence of a credible minimum leverage capital requirement, an Enterprise could release or redeploy capital during favorable economic periods when the risk-based capital requirements are low, and could be unable to raise sufficient capital to meet increasing risk-based capital requirements in a subsequent stress scenario. In the 2.5 percent alternative, FHFA is proposing a minimum leverage capital requirement that would provide a substantial, risk-insensitive backstop to the total proposed risk-based capital requirements, including credit risk, market risk, operational risk, and the going-concern buffer.

Impact of the 2.5 Percent Minimum Leverage Capital Requirement Alternative

If the proposed 2.5 percent alternative had been in place at the end of the third quarter of 2017, the combined minimum leverage capital requirement would have been $139.5 billion for the Enterprises. Fannie Mae's requirement would have been $83.8 billion based on total ending assets and guarantees of $3.4 trillion, and Freddie Mac's requirement would have been $55.6 billion based on total ending assets and guarantees of

$2.2 trillion. Similarly, if the proposed risk-based capital requirements had been in place, Fannie Mae's risk-based capital requirement would have been $115 billion or 3.4 percent, including the going-concern buffer of 75 bps. Similarly, Freddie Mac's risk-based capital requirement would have been $66 billion or 3.0 percent, including the going-concern buffer of 75 bps. Therefore, in considering the proposed risk-based capital requirements, the 2.5 percent minimum leverage capital requirement alternative would represent a backstop to the Enterprises' total proposed risk-based capital requirement including a going-concern buffer.

If the capital requirements in the proposed rule were implemented today, both Enterprises' risk-based capital requirements would, by significant margins, be the binding constraint regardless of which proposed leverage requirement alternative was in place. However, should home prices continue to increase and benign unemployment trends continue, as has occurred over the past several years, and should the credit quality of the Enterprises' new acquisitions continue to remain at historically high levels, FHFA expects that the 2.5 percent alternative would become the binding capital constraint for one or both Enterprises in 2018 or 2019.

Methodology for Developing the 2.5 Percent Minimum Leverage Capital Requirement Alternative

FHFA conducted five analyses that together support a risk-invariant minimum leverage capital requirement of 2.5 percent:

1. Adjusting the 4 percent bank leverage ratio for the relative risk of the Enterprises' business;

2. Determining the capital threshold for bank downgrades and adjusting the threshold for the relative risk of the Enterprises' business;
3. Determining the capital threshold for bank failures and adjusting the threshold for the relative risk of the Enterprises' business;
4. Analyzing the lifetime credit losses on the Enterprises' December 2007 books of business, with adjustments for loans the Enterprises no longer acquire and for credit risk transfers; and
5. Analyzing the CCF risk-based capital requirement on the Enterprises' September 2017 books of business, with adjustments for loans the Enterprises no longer acquire and for credit risk transfers.

These analyses produced estimates for the minimum leverage capital requirement in the 2.2 to 2.8 percent range, and FHFA selected 2.5 percent as the midpoint of the estimates for this proposed leverage requirement alternative. The five analyses are described below.

Adjusting the 4 Percent Bank Leverage Ratio

In the first analysis, FHFA considered the requirements in place for commercial banks. Specifically, FHFA adjusted the commercial bank leverage ratio requirement to recognize the lower risk of the Enterprises' assets compared to risk of the average bank's assets, where risk is defined using Basel risk weights. This adjustment recognizes the Enterprises' concentration in residential mortgage assets, which under the Basel Accords are assigned a 50 percent risk weight.

Under the U.S. implementation of Basel III, U.S. financial regulators require that banks maintain a Tier 1 leverage ratio of 4 percent to be considered adequately

capitalized. FHFA adjusted this ratio to take into account the Enterprises' lower risk-weighted asset density (risk-weighted assets divided by total assets) relative to the risk-weighted asset density of commercial banks.

Most of the Enterprises' assets are conforming residential mortgages, which have a 50 percent risk weight in the Basel standardized approach. In contrast, FHFA found that for the 34 bank holding companies subject to CCAR in 2017, the banks' assets had higher risk weights on average than the Enterprises' assets. FHFA calculated the average risk-weighted density as of the fourth quarter of 2016 for the 34 bank holding companies subject to CCAR. The analysis yielded an estimated overall risk-weighted asset density of 72 percent for the banks compared to 50 percent for the Enterprises. This suggests that the risk weighted asset density for the Enterprises' assets is about 69 percent (calculated as 50 percent divided by 72 percent) of the risk weighted asset density for the largest bank holding companies. Through this approach, FHFA estimated a minimum leverage capital requirement for the Enterprises of 2.8 percent (69 percent multiplied by 4 percent).

Determining the Capital Threshold for Bank Downgrades

In the second analysis, FHFA estimated a minimum leverage capital requirement from empirical analyses of bank credit rating downgrades. The Agency reviewed capital levels for banks that experienced downgrades in credit ratings. FHFA found that the number of credit rating downgrades declined markedly for banks with Tier 1 common equity capital levels in excess of 5.5 percent of risk-weighted assets. The credit downgrades reflected a lack of market confidence that the banks could survive as going concerns, despite the banks still having positive levels of capital.

The bank credit rating downgrade analysis was based on 72 banks that had both ratings from Standard & Poor's and total assets over $5 billion during a ten-year study period. The Agency found that banks with a risk-based capital ratio below 5.5 percent had a notable increase in the occurrence of a two-notch or three-or-more-notch rating downgrade within 4 quarters. For example, 53.0 percent of the banks with less than 4 percent risk-based capital experienced a two-notch credit rating downgrade and 37.0 percent experienced a three-or-more-notch downgrade. High rates of credit rating downgrades were also observed for banks with risk-based capital ratios between 4.0 percent and 5.5 percent.[42] Banks with at least 5.5 percent risk-based capital performed substantially better, and had a two-notch downgrade rate of between 7.0 percent and 19.0 percent depending on the risk-based capital ratio group (*e.g.*, 5.5 percent – 6.0 percent, 6.0 – 6.5 percent, etc.), and a three-or-more-notch downgrade rate of between 4.0 percent to 10.0 percent depending on the risk-based capital group.

It was clear from the analysis of credit rating downgrades that considerably better outcomes for depository institutions were associated with a risk-based capital ratio above 5.5 percent. A 50 percent average risk weight for Enterprise assets as applied in the previous analysis of bank leverage ratios corresponds to a minimum leverage capital requirement of 2.8 percent for the Enterprises.

Determining the Capital Threshold for Bank Failures

In the third analysis, FHFA estimated a minimum leverage capital requirement from empirical analyses of bank failures in a manner similar to the analysis for credit

[42] The two- and three-or-more-notch downgrade rates were 45%/40% for 4 - 4.5% capital, 50%/39% for 4.5% - 5% capital, and 37%/27% for 5 - 5.5% capital.

rating downgrades. The Agency reviewed capital levels for banks that experienced failures. FHFA found that the number of bank failures declined markedly for banks with Tier 1 common equity capital levels in excess of 5.5 percent of risk-weighted assets.

FHFA's bank failure analysis was based on 122 bank holding companies with assets of over $5 billion each. The Agency reviewed Tier 1 common equity capital ratios for each bank across a nearly 9-year study period (between the fourth quarter of 2004 and the first quarter of 2013). Banks with a risk-based capital ratio below 5.5 percent at the end of any quarter during the study period showed a marked increase in the rate of failure or government takeover. Almost half of the banks with a risk-based capital ratio below 4.0 percent failed. Less severe, but still high rates of failure were observed for banks with risk-based capital ratios between 4.0 percent and 5.5 percent.[43] Banks with at least 5.5 percent risk-based capital over the time horizon performed much better with a failure rate below 5.0 percent.

Similar to the analysis of credit rating downgrades, FHFA found that considerably better outcomes in the bank failure data were associated with a risk-based capital ratio above 5.5 percent. A 50 percent average risk weight for Enterprise assets as applied in the previous analysis of bank leverage ratios corresponds to a minimum leverage capital requirement of 2.8 percent for the Enterprises.

Analyzing the Lifetime Credit Losses on the Enterprises' December 2007 Books of Business

[43] The failure or takeover rate was 25% for 4 - 4.5% capital, 40% for 4.5% - 5% capital, and 13% for 5 - 5.5% capital.

In the fourth analysis, and as discussed above in section II.B, FHFA estimated the Enterprises' lifetime credit losses for the December 31, 2007 book of business, excluding loans that the Enterprises would no longer acquire according to their current acquisition criteria. FHFA also adjusted (*i.e.*, reduced) the Enterprises' lifetime credit losses for the December 31, 2007 book of business to account for current business practices of credit risk transfer. To calculate an Enterprise leverage ratio, FHFA added estimated requirements for market risk, operational risk, and a going-concern buffer to the adjusted lifetime losses on the December 31, 2007 book. Based on this approach, FHFA estimated a minimum leverage capital requirement for the Enterprises of 2.2 percent consisting of adjusted lifetime credit losses of 1.2 percent, market risk capital requirements of 0.2 percent, operational risk capital requirements of 0.08 percent, and a going-concern buffer of 0.75 percent.

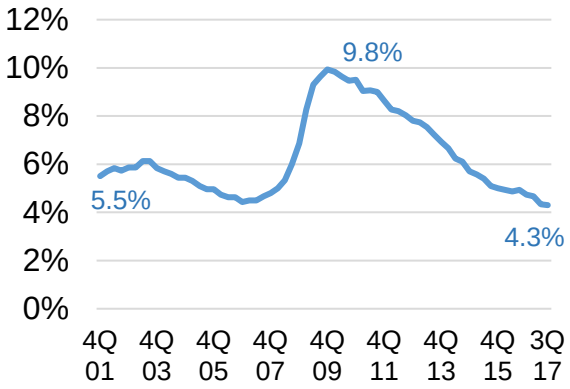
Analyzing the Risk-Based Capital Requirements on the Enterprises' June 2017 Books of Business

In the fifth and final analysis, and in order to establish a point of comparison using recent data, FHFA calculated risk-based capital requirements per the proposed rule for all loans held or guaranteed by the Enterprises as of June 30, 2017, excluding assets that the Enterprises no longer acquire. The level of the Enterprises' aggregate risk-based capital requirements as of June 30, 2017 provides a point-in-time benchmark for a minimum, non-risk-based capital backstop to the proposed risk-based capital requirements because of the recent long stretch of favorable economic conditions and several years of the Enterprises acquiring predominately high-credit quality loans. Specifically, as presented below in Figure 2, the FHFA U.S. Purchase-Only House Price

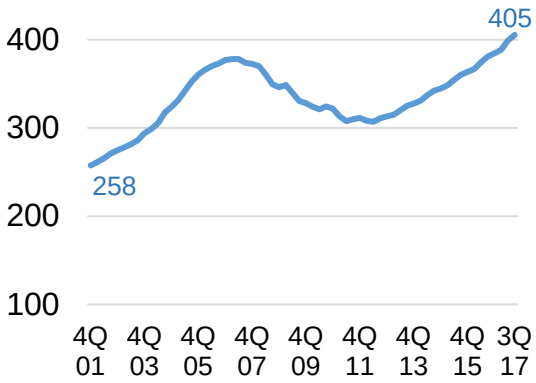
Index reached an all-time high in the second quarter of 2017, the U.S. unemployment rate of 4.3% as of May 2017 was at its lowest level in 16 years, and as of June 2017, the average credit scores of the Enterprises' guarantee books of business were at all-time highs (approximately 745), and the average loan-to-value ratios (60 percent) were nearing lows last seen in 2006. The risk-based capital requirements as of June 30, 2017 could represent close to a cyclical low point for the proposed risk-based capital requirements, and would therefore be nearing the point at which a non-risk-based leverage requirement would provide a useful backstop to the risk-based requirements.

Figure 2: Market, Fannie Mae, and Freddie Mac Statistics

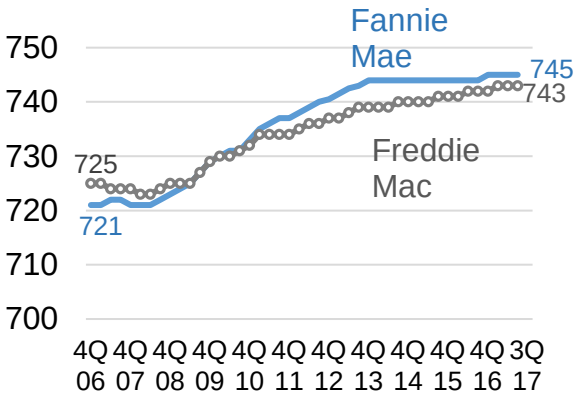
A: Civilian Unemployment Rate
Seasonally Adjusted



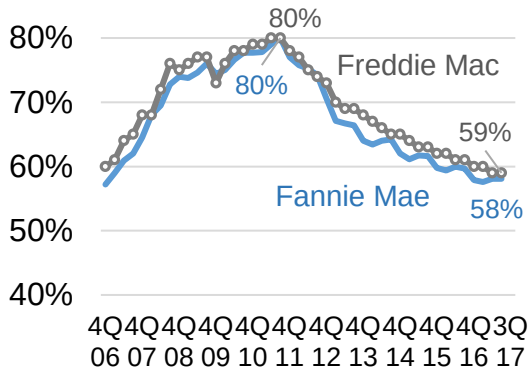
B: FHFA All-Transactions House Price Index, Not Seasonally Adjusted
(First Quarter 1980 = 100)



C: Enterprises' Weighted Average Portfolio Credit Score



D: Enterprises' Weighted Average Portfolio Mark-to-Market Loan-to-Value



Source for Panels A and B: Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis

The analysis described above resulted in risk-based capital requirements net of CRT and excluding loans the Enterprises no longer acquire of $61 billion for Fannie Mae, or 2.3 percent of UPB, and $39 billion for Freddie Mac, or 2.4 percent of UPB.

The estimates derived from the Enterprises' 2007 results, 2017 data, current acquisition criteria, and the proposed risk-based capital requirements complement the

prior bank-based estimates and further suggest a minimum capital leverage requirement for the Enterprises in the range of 2 percent to 3 percent. FHFA considered factors that would indicate an appropriate requirement more towards either side of the range. Selecting a lower requirement would recognize that the Enterprises have largely passed market risk onto mortgage-backed security investors, while the banks continue to hold large amounts of whole loans on their balance sheet. A lower requirement would also recognize that the Enterprises have more stable funding sources than banking deposits, which are callable. Selecting a higher requirement would recognize that the Enterprises pose a greater level of systemic risk than many of the banks. The Enterprises have an asset base that is less diversified than the banks, which can increase loss severity during periods of stress. After considering the relevant factors, FHFA selected the 2.5 percent mid-point of the range for this proposed minimum leverage capital requirement alternative, which aligns with the estimates derived from the analyses previously cited in this subsection.

The 2.5 Percent Minimum Leverage Capital Requirement Alternative

As illustrated in Table 1 and Table 3, the statutory minimum capital requirement for the Enterprises was far too low during the recent financial crisis. In proposing the 2.5 percent alternative, FHFA considered the need for a leverage requirement to serve as a backstop to risk-based capital requirements, such as those in this proposed rulemaking, that would provide the Enterprises with sufficient capital to continue to operate effectively through all economic and credit cycles while simultaneously providing protection against the model risk inherent in risk-based capital standards, including the

possibility that capital relief allocated to the Enterprises' risk transfer mechanisms is overestimated.

While model risk broadly covers errors and omissions in the design and implementation of models, one common manifestation of model risk is the high level of uncertainty around the performance of new products in a stress event given the lack of historical performance data on new products. This was made evident in the recent financial crisis when the risk-based capital rule then in place for the Enterprises did not adequately identify the risk in the Enterprises' assets, reinforcing the need for a leverage ratio to serve as a backstop for total risk-based capital requirements.

In addition, there are also non-economic risks that are typically not captured in a risk-based capital framework. For example, there is a mismatch with risk-based capital being measured on an economic basis, while available capital is measured on an accounting basis. Changes in accounting standards, regulatory standards, or tax law can cause accounting losses, which deplete available capital, potentially contributing to insolvency. The proposed risk-based capital requirements, which are based on estimates of unexpected economic losses, make no provision for non-economic losses.

While an excessively high minimum leverage capital requirement could have adverse consequences on the Enterprises' economic incentives to conduct certain business transactions, the absence of a credible minimum leverage capital requirement could lead an Enterprise to release or redeploy capital during favorable economic periods when the risk-based capital requirements are low and could result in the Enterprise being unable to raise sufficient capital to meet increasing risk-based capital requirements in a subsequent stress scenario. The economic environment in which this rule is being

proposed could indicate the approach of such an economic scenario, and could indicate a cyclical low in risk-based capital requirements in light of the large increase in home prices in recent years and the steep drop in national unemployment, combined with the historically high credit quality of recent Enterprise acquisitions. The 2.5 percent alternative could avoid a situation in which declining Enterprise capital levels affect their ability to raise capital and provide the market with a certain level of stability. This alternative would indicate a plan to maintain capital and demonstrate a commitment to safety and soundness, and present a market-facing statement of a significant baseline level of capital in good or bad market conditions.

The Bifurcated Minimum Leverage Capital Requirement Alternative

The second minimum leverage capital requirement alternative included in this proposed rule, the bifurcated alternative, would establish different minimum leverage capital requirements for different Enterprise business segments, which would be applied to total assets (as determined in accordance with GAAP) and off-balance sheet guarantees related to securitization activities. Specifically, under the bifurcated alternative, the Enterprises would be required to hold 4 percent capital for non-trust assets and 1.5 percent capital for trust assets. This compares to the current minimum leverage capital requirement, set by statute, of 2.5 percent of retained portfolio assets, 0.45 percent of mortgage-backed securities outstanding to third parties, and 0.45 percent of other off-balance sheet obligations.

The bifurcated alternative proposes a minimum leverage capital requirement that would differentiate between the greater funding risks of the Enterprises' non-trust assets and the minimal funding risks of the Enterprises' trust assets, while also providing a

backstop that is anchored to the proposed risk-based capital framework itself. The proposed approach of a minimum leverage capital requirement equal to 1.5 percent of trust assets would identify the risk-based capital requirements as the "primary" capital measure for the Enterprises because it was derived using empirical losses experienced during the recent financial crisis and reflects a refined approach to risk. This approach would result in a combined minimum leverage capital requirement that would more frequently fall below the risk-based capital requirements than the 2.5 percent alternative. As a result, as discussed below, the bifurcated alternative would be less likely to produce a binding leverage requirement that could negatively impact an Enterprises' marginal economic decision-making.

For the Enterprises' non-trust assets, the 4 percent requirement would be comparable to the 4 percent leverage requirement for commercial banks, because these assets face similar stability concerns that motivated the Basel Committee to adopt a leverage ratio on top of the Basel risk-based capital framework in the wake of the recent financial crisis.[44] For the Enterprises' trust assets, the 1.5 percent requirement is calibrated to be comparable to the proposed post-CRT credit risk capital requirements for the Enterprises' single-family and multifamily portfolios as of September 30, 2017. The intention of this 1.5 percent requirement, therefore, would be to provide a backstop to the proposed credit risk capital requirements to address the possibility of credit risk model mis-estimation and pro-cyclicality risks. The 1.5 percent requirement is also calibrated to

[44] "An underlying cause of the global financial crisis was the build-up of excessive on- and off-balance sheet leverage in the banking system. In many cases, banks built up excessive leverage while apparently maintaining strong risk-based capital ratios. At the height of the crisis, financial markets forced the banking sector to reduce its leverage in a manner that amplified downward pressures on asset prices. This deleveraging process exacerbated the feedback loop between losses, falling bank capital and shrinking credit availability." Basel Committee on Banking Supervision, "Basel III leverage ratio framework and disclosure requirements" (Jan. 2014), p. 1.

be lower than the proposed aggregate risk-based capital requirements in order to avoid incentives that could reduce the amount of CRT transactions conducted by the Enterprises and other distortions in the Enterprises' marginal economic decision-making. Finally, the 1.5 percent requirement is calibrated to recognize that the risk composition of the Enterprises' business has fundamentally shifted through conservatorship and the requirements of the PSPAs that limit the Enterprises' retained portfolios to $250 billion.

Under the bifurcated alternative, as under the 2.5 percent alternative, FHFA would retain its authority to increase an Enterprise's leverage requirement by regulation or order if the Agency determined that capital levels had become too low – for example, because of pro-cyclical concerns during a housing bubble – and that it was appropriate to increase these levels. FHFA would also have the authority, as discussed below, to increase the risk-based capital requirements by regulation or order as determined to be appropriate, including as a result of pro-cyclical concerns.[45]

Using the Agency's authority in this way would provide FHFA with the ability to increase capital requirements in the event it was deemed necessary without the negative consequences of a minimum leverage ratio that was the binding constraint, thus discouraging CRT transactions in the interim period. One downside of this authority, however, is that this flexibility could make it more challenging for the Enterprises to make capital allocation decisions as FHFA's use of this authority may be difficult to anticipate.

Impact of the Bifurcated Minimum Leverage Capital Requirement Alternative

[45] This authority is discussed in greater detail in section II.F.

If the bifurcated minimum leverage capital requirement alternative had been in place at the end of the third quarter of 2017, the combined requirement for the Enterprises would have been $103 billion or 1.9 percent of assets. Of this, $72 billion would have been for trust assets and $32 billion would have been for non-trust assets. Fannie Mae's requirement would have been $60 billion based on total ending assets of $3.4 trillion, representing a 1.8 percent total minimum leverage requirement, with $44 billion of capital required for trust assets and $16 billion for non-trust assets. Freddie Mac's minimum leverage capital requirement would have been $43 billion based on total ending assets of $2.2 trillion representing a 1.9 percent total minimum leverage requirement, with $28 billion of capital required for trust assets and $16 billion for non-trust assets.

If implemented today, both Enterprises' risk-based capital requirements would, by significant margins, be the binding constraints. Fannie Mae's risk-based capital requirement would have been $115 billion or 3.4 percent as of September 30, 2017, while Freddie Mac's risk-based capital requirement would have been $66 billion or 3.0 percent as of September 30, 2017.

Table 36: Bifurcated Minimum Leverage Capital Requirement Alternative Comparison to the Proposed Risk-Based Capital Requirements

	Fannie Mae	Freddie Mac	Enterprises Combined
	Capital Requirement, $billions	Capital Requirement, $billions	Capital Requirement, $billions
Bifurcated Alternative	$60.4	$43.1	$103.5
Risk-Based Capital Requirement	$115.0	$65.9	$180.9
Bifurcated Alternative as % of Risk-based Capital Requirement	*53%*	*65%*	*57%*
Going-Concern Buffer	($24.0)	($15.9)	($39.9)
Risk-Based Capital Requirement Less Going-Concern Buffer	$91.0	$50.0	$141.0
Bifurcated Alternative as % of Risk-based Capital Requirement Less Going-Concern Buffer	*66%*	*86%*	*73%*
Net Credit Risk Capital Requirement *	$70.5	$41.5	$112.0
Bifurcated Alternative as % of Net Credit Risk Capital Requirement	*86%*	*104%*	*92%*
Credit Risk Transferred	($11.5)	($10.0)	($21.5)
Post-CRT Net Credit Risk Capital Requirement	$59.0	$31.5	$90.5
Bifurcated Alternative as % of Post-CRT Net Credit Risk Capital Requirement	*102%*	*137%*	*114%*

** Risk-based capital requirement less going-concern buffer, market risk, operational risk, and DTA capital requirements.*

Methodology for Developing the Bifurcated Minimum Leverage Capital Requirement Alternative

The bifurcated alternative considers the relative funding risks of the Enterprises' trust assets compared to the Enterprises' non-trust assets, and includes different requirements for each of these categories. In developing the bifurcated alternative, FHFA considered how to design the leverage requirement so it would serve as a backstop for the risk-based capital requirements proposed in this rulemaking without adversely impacting

the Enterprises' marginal economic decision-making. For the non-trust asset component of the bifurcated alternative, FHFA further considered its comparability to the bank leverage requirement. For the trust asset component of the bifurcated alternative, FHFA considered its comparability to the credit risk capital requirements in the proposed rule.

Funding and Other Risks of the Enterprises' Business Model

As discussed earlier, the Enterprises' assets can be distinguished between non-trust assets funded by debt and derivatives, which could be subject to deleveraging pressures, and MBS and participation certificate trust assets, which are not funded by the Enterprises or subject to such pressure, and consequently would have a lower leverage requirement under the bifurcated alternative. That distinction is also consistent with the distinction made in the Safety and Soundness Act minimum leverage ratios between on-balance sheet assets (under then-applicable accounting treatment) and off-balance sheet assets, with the latter having a much lower leverage ratio. While FHFA believes that both of the statutory leverage minimums are much too low to be safe and sound, the concept of different ratios for different aspects of the Enterprises' business could be implemented at higher levels as proposed under the bifurcated alternative. The relative funding and other risks of the Enterprises' trust assets and non-trust assets are described below.

Trust Assets

For the Enterprises' credit guarantee business, the bifurcated minimum leverage capital requirement alternative would require less capital for mortgage assets held in trust accounts than for non-trust assets (including those held in the retained portfolio). This lower level reflects that both Fannie Mae and Freddie Mac purchase single-family and

multifamily mortgages that they package into mortgage-backed securities and sell to investors, which substantially reduces the funding risk of purchasing these mortgage assets.

On the single-family side, the Enterprises operate nearly identical securitization models. Fannie Mae and Freddie Mac sell MBS to investors through either of two methods – first, where lenders provide loans to an Enterprise in exchange for mortgage-backed securities based on those same loans, or second where lenders sell loans to an Enterprise in exchange for cash. When purchasing loans through the second method, the Enterprise aggregates the loans, securitizes them, and then sells the resulting MBS to investors for cash. In both cases, the Enterprises guarantee the timely payment of principal and interest to MBS investors and charge a guarantee fee for doing so.

The single-family securitization process provides the Enterprises with a stable funding source that is match-funded with the mortgage assets they purchase. The securitizations are consolidated on the Enterprises' balance sheets, showing both the mortgage assets held in trust accounts as well as the payments owed to MBS investors. Investments in MBS cannot be withdrawn from existing securities during times of market stress, which differentiates them from the banking deposits and short-term debt relied upon by banks, which can leave banks in need of new funding at times when debt funding becomes harder and more expensive to obtain. In contrast, the Enterprises' stable funding reduces risk to the Enterprises during times of market stress and economic downturns.

In addition to transferring funding risk to investors, the Enterprises transfer other risks of single-family mortgages held in trust accounts in several ways. The

securitization process itself results in transferring the interest rate and market risk of these mortgages to investors. In addition, because the securitization process does not transfer the credit risk of securitized single-family mortgages, the Enterprises have also developed credit risk transfer programs that transfer a substantial portion of the credit risk on these loans to private investors through separate CRT transactions. The credit risk of an individual loan is the same whether it is securitized or held as a whole loan in a retained portfolio, but the Enterprises' existing CRT programs currently focus on transferring credit risk on loans held in trust accounts.

The resulting risks the Enterprises must manage for single-family mortgage assets held in trust accounts differ substantially from the risks faced by the Enterprises and banks from the assets they hold in their retained portfolios – both when looking at the overall asset composition of banks and the relative risk of the mortgage assets held on bank balance sheets. Most of the Enterprises' assets are conforming residential mortgages, which have a 50 percent risk weight in the Basel standardized approach. When FHFA looked at the average risk weight for a group of large banks, as discussed earlier, it estimated an overall risk-weighted asset density of 72 percent for the banks compared to 50 percent for residential mortgages guaranteed by the Enterprises. In addition, banks hold a greater degree of risk for the whole residential mortgage loans on their balance sheets compared to Enterprise mortgage assets held in trust accounts. First, whole loans held on-balance sheet do not benefit from the match-funding securitization benefit of transferring interest rate and market risk to investors. Second, banks also do not have CRT programs comparable to the Enterprises to transfer the credit risk of these loans to other private actors.

With respect to the Enterprises' multifamily business lines, the Enterprises use different business models but both multifamily credit guarantee businesses involve securitizing the multifamily loans each company purchases and providing for credit risk sharing with the private sector. Fannie Mae primarily utilizes a loss-sharing model referred to as DUS (Delegated Underwriting and Servicing), and Freddie Mac predominately uses a structured mortgage-backed securities model referred to as K-deals.

Fannie Mae's DUS program delegates most underwriting of multifamily loans to a set of approved lenders. In general, the vast majority of multifamily loans purchased by Fannie Mae are individually securitized in a trust and sold to investors as MBS as opposed to held on Fannie Mae's balance sheet as whole loans. These lenders usually participate in loss-sharing agreements with Fannie Mae under which they agree to take on a pro rata share of losses. Nearly every multifamily loan purchased by Fannie Mae includes a loss-sharing agreement with the originating lender. The amount of loss borne by the lender varies based on their financial strength, but a majority of purchased loans include a significant portion of risk shared with the lender (between 25 and 33 percent of the unpaid principal balance). As with its single-family business line, Fannie Mae guarantees the timely payment of principal and interest on the multifamily MBS it issues.

Freddie Mac's principal multifamily model – referred to as K-deals – involves purchasing and aggregating multifamily loans and then securitizing those loans. Once the loans are aggregated, Freddie Mac sells a pool of them to a third party trust. The trust issues subordinated tranches of MBS, which are sold, without a guarantee, to investors. The subordinated tranches, in general, represent between 15 and 17 percent of underlying UPB of the mortgage pool and assume a first loss position in the securitization structure.

The trust also issues senior tranches representing the balance of the mortgage pool, which are then purchased by Freddie Mac. Freddie Mac places the senior tranches of securities in a trust that issues pass-through certificates (K-certificates) that Freddie Mac guarantees and sells. This securitization structure transfers the vast majority of the underlying credit risk from these mortgages, as well as all the funding risk.

Despite the difference in executions, both Enterprises' multifamily models result in the same match-funding that exists for single-family securitizations, and, with the exception of Freddie Mac's K-deals, the senior tranches of which are reported as off-balance sheet guarantees, both the multifamily assets held in trust accounts and the liabilities owed to multifamily investors are reflected on the Enterprises' balance sheets. Like the Enterprises' single-family securitizations, the approach to securitizing and transferring credit risk on multifamily loans also distinguishes it from whole multifamily loans held on a bank's balance sheet.

Non-Trust Assets

The bifurcated minimum leverage capital requirement alternative would require more capital for the Enterprises' non-trust assets, including assets held in the Enterprises' retained portfolios, than for trust assets, which takes into consideration the higher risks the Enterprises must manage for these assets. Unlike their credit guarantee business, the Enterprises' retained portfolios expose the companies to leverage and funding risks for these assets, as well as interest rate, operational, and credit risk.

Prior to conservatorship, the Enterprises held large retained portfolios to generate investment returns. While in conservatorship, the Enterprises have substantially reduced their legacy asset levels but continue to hold assets in their retained portfolios for three

purposes that support their credit guarantee business: 1) purchasing loans to support single-family and multifamily loan aggregation for subsequent securitizations; 2) purchasing delinquent loans out of MBS and engaging in loss mitigation options with borrowers; and 3) supporting limited, approved affordable housing objectives where securitization is not yet a viable market option. Single-family loan aggregation may expose the Enterprises to credit, interest rate, and funding risk as Enterprises hold onto newly originated loans ahead of securitization. The Enterprises hold these loans on balance sheet for a limited period, generally no more than 90 days, in order to aggregate sufficient quantities before securitization. In addition, Freddie Mac's multifamily business includes a similar aggregation function, whereas Fannie Mae's multifamily MBS are primarily single loan securities and, thus, do not require significant portfolio capacity for loan aggregation.

The Enterprises have reduced their retained portfolios by a combined 60 percent since entering conservatorship, which has reduced their overall risk exposure but has not eliminated risk for the remaining assets held in their retained portfolios. These assets include some pre-conservatorship assets held on their books, such as PLS, although the Enterprises have disposed of the majority of these assets.

Both companies issue unsecured debt to fund their retained portfolios holdings, and this debt exposes the companies to funding risk for retained portfolio assets, which mortgage assets held in trust accounts do not have. In times of market stress or economic downturns, as debt matures the Enterprises would need to issue new, unsecured debt in order to fund and support assets already held on their retained portfolios. Because this

funding could be more expensive or harder to obtain in a stressed market, this could result in increased risk to the Enterprise.

The nature of the Enterprises' retained portfolios makes these assets more comparable to the risks banks have from assets held on their balance sheets. In addition to having more funding risk, the Enterprises must also manage interest rate, operational, and credit risk for the mortgage assets held in their retained portfolio, which is like the risks managed by banks for whole mortgage loans.

By specifying a higher leverage requirement for non-trust assets under the bifurcated alternative, the minimum leverage capital requirement would significantly increase in the event the Enterprises' grew their retained portfolio in the future, as could occur during a downturn if the Enterprises purchased significant numbers of newly delinquent loans out of mortgage-backed securities in order to mitigate losses and facilitate loss mitigation options for borrowers. Conversely, under the bifurcated alternative, the minimum leverage capital requirement for the Enterprises could decline in the future as the Enterprises continue to dispose of legacy retained portfolio assets and to sell or re-securitize seriously delinquent or re-performing loans.

Minimum Leverage Requirement as a Backstop to the Proposed Risk-Based Capital Requirements

The bifurcated alternative seeks to calibrate the minimum leverage requirement so that it provides a backstop to the proposed risk-based capital requirements, but with less likelihood that it becomes the binding capital constraint for the Enterprises. The bifurcated alternative identifies the proposed risk-based capital requirements as the primary or benchmark capital measure for the Enterprises. Such an approach would rely

on the view that the proposed risk-based capital requirements included in this rulemaking are a detailed and robust assessment of risk to Fannie Mae and Freddie Mac and that the purpose of the minimum leverage capital requirement would be to serve as a backstop to guard against the potential that the risk-based requirements would underestimate the risk of an Enterprises' assets, due to model risk or pro-cyclicality for example.

As detailed earlier, the risk-based capital portion of the proposed rule provides a granular assessment of credit risk specific to different mortgage loan categories, as well as market risk and operational risk components. The proposed risk-based requirements are, in part, modeled on empirical losses experienced by the Enterprises as a result of the recent severe financial crisis over the full life of the loans. The capital required for the Enterprises would be required and in place at the date of loan acquisition and would not take into account any revenues from guarantee fees that they will earn. On top of these risk-based components, the proposed rule includes a risk-insensitive going-concern buffer as part of the risk-based capital requirements to ensure that an Enterprise could continue to write new business for what is projected to be a year or two following a period of market stress or a severe economic downturn.

The leverage requirements under the proposed bifurcated alternative also take into consideration the potential impacts that a binding minimum leverage requirement could have on an Enterprise's economic incentives to conduct – or not conduct – certain business transactions. This impact on business transactions could be felt across an Enterprises' business, including which mortgage loans to purchase for securitization, whether to buy or sell particular assets for their retained portfolios, whether to engage in CRT transactions and which transactions to engage in, and what liquidity positions to

hold for periods of market stress. The economic incentives created by a binding leverage ratio could increase the overall risk profile of an Enterprises' book of business relative to its current operations. As a result, while a binding minimum leverage requirement would result in higher Enterprise capital levels, such a requirement would not necessarily make an Enterprise more safe and sound.

More specifically, under a binding minimum leverage requirement, an Enterprise could have reduced economic incentives to differentiate among the relative riskiness of different mortgage loans purchased for securitization. For example, under a scenario where the total risk-based capital requirement was 2.5 percent and the minimum leverage requirement was 4 percent, an Enterprise would have an economic incentive to increase the risk-level of its aggregate loan purchases up to the 4 percent level since the Enterprise would be required to hold 4 percent capital regardless of the riskiness of its assets. This could encourage an Enterprise to purchase loans with multiple risk layers – such as loans with higher LTVs, adjustable rates, and investor owned properties – in order to earn enough of a return to be commensurate with the capital charge. Conversely, under this hypothetical, an Enterprise would have a disincentive to purchase lower-risk loans – such as loans with lower LTVs and 15-year terms – because they would make it more difficult to earn a sufficient return relative to the binding capital requirement. Taken together, these economic incentives could lead an Enterprise to purchase more loans with multiple risk-layering features that could, in turn, result in a higher risk composition of assets. By contrast, under the proposed risk-based capital rule, whenever the Enterprise purchases or guarantees a riskier asset, its required capital would automatically increase. If the minimum leverage requirement were the binding capital constraint and did not

distinguish between retained portfolio and trust assets, an Enterprise would also have an economic incentive to increase the risk of assets held or reduce holding of low-risk assets in their retained portfolio until the risk-based capital requirement increases to the level of the minimum leverage requirement.

A binding minimum leverage ratio could also have an impact on the Enterprises' incentives to conduct credit risk transfer transactions. In this proposed rule, an Enterprise would receive capital relief for CRT transactions under the risk-based capital framework but not the minimum leverage requirement. As a result, a minimum leverage ratio that is set too high could lead to a capital requirement that exceeds the post-CRT risk-based capital requirement. An example helps illustrate this dynamic. If an Enterprise transferred credit risk to private investors through fully-funded STACR or CAS transactions with no counterparty exposure, an Enterprise's pre-CRT risk-based capital requirement would be reduced to account for the credit risk transferred for these loans. For example, a pre-CRT risk-based requirement of 4.5 percent could be reduced to a post-CRT risk-based requirement of 2 percent. However, a minimum leverage requirement that is set at 4 percent would become the binding capital requirement, because it would not be reduced by the equivalent amount of credit risk transferred through CRT transactions.

Under this example, a minimum leverage requirement of 4 percent would likely result in an Enterprise declining to conduct these CRT transactions because the Enterprise would need to pay for credit risk protection twice – once through the cost of holding more capital than required under the risk-based capital requirement and a second time

through the cost of paying private investors for the credit risk protection provided through CRT transactions.

As illustrated by this example, it is important to consider how a minimum leverage requirement and the proposed risk-based capital requirements would interact with one another, and what the resulting effect would be on the Enterprises' incentives to conduct CRT transactions or other risk reducing transactions. As conservator of the Enterprises, FHFA has required Fannie Mae and Freddie Mac to develop CRT programs that transfer a meaningful amount of credit risk to private investors in an economically sensible manner. FHFA believes that these programs are an effective way to reduce risk to the Enterprises and, therefore, to taxpayers. Enterprise CRT transactions effectively transfer credit risk to the private sector, and, for many transactions, do so in a way that is fully funded up-front, without counterparty risk. In other CRT transactions, the Enterprises require that the transactions be partially collateralized to mitigate counterparty risk. If capital requirements caused the Enterprises to reduce the amount of CRT transactions they conducted, this could result in a greater concentration of credit risk with the Enterprises and could be counter to FHFA's overall objective of reducing credit risk to the Enterprises and taxpayers.

Proposed Leverage Requirements Under the Bifurcated Alternative

The total leverage requirement under the proposed bifurcated alternative would be the result of blending the 4 percent requirement for non-trust assets and the 1.5 percent requirement for trust assets. While the bifurcated alternative would provide an overall minimum leverage capital requirement that would almost certainly be less than the 2.5 percent alternative, it could also provide a backstop to guard against Enterprise capital

becoming too low. The requirements included in the bifurcated alternative are intended to limit the instances in which the minimum leverage capital requirement would serve as the Enterprises' binding capital constraint and, as a result, limit the negative impacts of a binding leverage requirement.

The proposed leverage requirements under the bifurcated alternative would produce a total leverage requirement that is calibrated to provide a significant backstop to the post-CRT credit risk capital component of the proposed risk-based capital requirements for both single-family and multifamily whole loans and guarantees currently on the Enterprises' balance sheets. For Fannie Mae, the bifurcated alternative would produce a 1.8 percent minimum leverage requirement as of September 30, 2017. The total leverage requirement of 1.8 percent compares to a total risk-based capital requirement of 3.4 percent as currently calculated under the proposed rule, which includes credit risk, operational risk, market risk, and the going-concern buffer, and 2.7 percent excluding the going-concern buffer. In making a comparison specifically with the credit risk component of the proposed risk-based capital framework, the 1.8 percent total leverage requirement compares to a 1.8 percent post-CRT net credit risk capital requirement. As a result, the 1.8 percent leverage level would reach 100 percent of Fannie Mae's proposed post-CRT net credit risk capital requirement for the third quarter of 2017.

For Freddie Mac, the proposed leverage requirements under the bifurcated alternative would produce a 1.9 percent minimum leverage requirement as of September 30, 2017. The total leverage requirement of 1.9 percent compares to a total risk-based capital requirement of 3.0 percent as currently calculated under the proposed rule, which

includes credit risk, operational risk, market risk, and the going-concern buffer, and 2.3 percent excluding the going-concern buffer. In making a comparison specifically with the credit risk component of the proposed risk-based capital framework, the 1.9 percent total leverage requirement compares to a 1.4 percent post-CRT net credit risk capital requirement. As a result, the 1.9 percent leverage level would reach 135 percent of Freddie Mac's proposed post-CRT net credit risk capital requirement for the third quarter of 2017.

Non-Trust Assets

As noted earlier, under the bifurcated alternative the proposed 4 percent leverage requirement for the Enterprises' non-trust assets, which include the retained portfolios, would be comparable to the leverage requirement for depository institutions. This approach would align the riskiest part of the Enterprises' business, the part that is most comparable with the funding risk of depository institutions, with the leverage requirement established by other federal financial regulators.[46]

Because cash and cash equivalents are components of the retained portfolio, the bifurcated alternative would include cash and cash equivalents in the asset base for the 4 percent minimum leverage capital requirement. While cash and cash equivalents are highly liquid investment securities, they remain subject to funding risk in much the same way as other Enterprise portfolio assets, although because of their liquidity deleveraging

[46] Federal financial regulators have established a 4 percent leverage ratio for depository institutions and the asset base does not include off-balance sheet assets. In addition, regulators have established a 3 percent supplemental leverage ratio that applies to designated depository institutions and the asset base includes off-balance sheet assets. Similarly, the enhanced supplemental leverage ratio is set at 5 percent and applies to an even narrower subset of depository institutions and the asset base also includes off-balance sheet assets.

with respect to them would not create the same downward pressure on asset values as for other types of assets.

Trust Assets

The bifurcated alternative includes a 1.5 percent leverage requirement for trust assets.[47] This proposed requirement seeks to balance the objectives of providing a sufficient backstop to the risk-based capital requirements and avoiding negative economic incentives that could reduce the usage of CRT transactions or otherwise increase Enterprise risk levels.

The 1.5 percent requirement for trust assets under the proposed bifurcated alternative could provide a significant backstop when compared to the credit risk capital requirements for Enterprise trust assets under the proposed risk-based capital requirements. In this comparison, FHFA has defined trust assets to include new single-family acquisitions, performing single-family seasoned loans, and all multifamily loans held in trust accounts. Trust assets exclude re-performing single-family loans and non-performing single-family loans that are now held by the Enterprises in their retained portfolios, and these assets would have a 4 percent minimum leverage requirement under the bifurcated alternative.

For Fannie Mae, the proposed 1.5 percent leverage requirement for trust assets would compare to a 1.3 percent post-CRT net credit risk capital requirement. As a result,

[47] The bifurcated alternative would also assign the 1.5 percent minimum leverage ratio to assets categorized under accounting standards as off-balance sheet assets. Both Enterprises have limited legacy off-balance sheet assets. In addition, Freddie Mac's guaranteed senior tranches of its multifamily securities, most commonly through its K-deal securitizations, are the only off-balance sheet assets either Enterprise currently acquires. These guarantees do constitute credit risk that Freddie Mac assumes, although the deep subordination provided by the junior tranches that are not guaranteed and are sold to private investors provide significant credit protection to these guarantees.

the 1.5 percent leverage requirement would reach 115 percent of Fannie Mae's proposed post-CRT net credit risk capital requirement for all trust assets. For Freddie Mac, the proposed 1.5 percent leverage requirement for trust assets would compare to a 1.1 percent post-CRT net credit risk capital requirement. As a result, the 1.5 percent leverage requirement would reach 136 percent of Freddie Mac's proposed post-CRT net credit risk capital requirement for all trust assets as of the third quarter of 2017.

While this bifurcated minimum leverage capital requirement alternative could provide a significant backstop for the capital necessary to withstand credit losses in a severe stress scenario, the proposed risk-based capital requirements would in most circumstances remain the binding capital constraint for the Enterprises even after accounting for CRT. This is because the post-CRT net credit risk capital requirement is only one component of the total risk-based capital framework proposed in this rulemaking, which also has components for market risk, operational risk, and a going-concern buffer.

Considering the Enterprises' current use of CRT, a 1.5 percent minimum leverage requirement for trust assets could provide additional protection during a period of rapid appreciation in home prices beyond the protection provided by the proposed credit risk capital requirements, and could be a sufficient backstop for potential shortcomings of the proposed credit risk capital requirements such as mis-estimations of stress losses. Should FHFA determine that the leverage requirement is insufficient to address rapid and unsustainable home price appreciation, FHFA could also use its authority, described above, to adjust by order or regulation either the risk-based capital requirement, the leverage requirement, or both.

Question 28: Should FHFA consider additional capital buffers, such as buffers to address pro-cyclical risks, in addition to the leverage ratio and FHFA's existing authority to temporarily increase Enterprise leverage requirements and why?

Question 29: FHFA is soliciting comments on the advantages and disadvantages of setting a single minimum leverage capital requirement under the 2.5 percent alternative. FHFA is seeking views both on this general approach and the minimum requirements proposed in the 2.5 percent alternative. FHFA is requesting data and supplementary analysis that would support consideration of alternative requirements for a single minimum capital requirement.

Question 30: FHFA is soliciting comments on the advantages and disadvantages of the bifurcated alternative and establishing minimum leverage capital requirements of 1.5 percent for mortgage assets held in trusts and 4 percent for retained portfolio assets. FHFA is seeking views both on this general approach and the minimum requirements proposed in the bifurcated alternative. FHFA is requesting data and supplementary analysis that would support consideration of alternative approaches or requirements.

Question 31: FHFA is soliciting comments that provide feedback on the relative advantages and disadvantages of the 2.5 percent alternative and the bifurcated alternative.

Question 32: Instead of adopting the 2.5 percent alternative or bifurcated alternative as proposed, should FHFA, instead, adopt another approach to the minimum leverage capital requirement that provides a separate leverage requirement specifically for assets that are part of credit risk transfer transactions? If so, why? FHFA is requesting data and supplementary analysis that would support consideration of alternative measures.

Question 33: Given the high quality and short duration of cash and cash equivalent assets, should FHFA consider a lower and separate leverage ratio for these assets so as to not discourage the Enterprises from holding cash and cash equivalent assets to support liquidity? For the bifurcated alternative, should cash and cash equivalent assets be subject to the 1.5 percent leverage requirement rather than the 4 percent requirement? FHFA is requesting data and supplementary analysis that would support consideration of alternative measures.

Question 34: FHFA is soliciting comments on the advantages and disadvantages of including off-balance sheet exposures in the 2.5 percent leverage ratio alternative, and whether off-balance sheet assets should be included in the non-trust assets (which includes the retained portfolio) or trust assets component of the bifurcated alternative. FHFA is requesting data and supplementary analysis that would support alternative perspectives.

E. Definition of Capital

This section corresponds to Proposed Rule § 1240.1(a)

The Safety and Soundness Act includes definitions of core capital and total capital. FHFA does not have the authority to change those definitions in the proposed rule, in contrast to the banking regulators who have greater definitional flexibility under their statutes. Therefore, the proposed rule uses the statutory definitions of core capital and total capital for the Enterprises.

Using the statutory definitions, core capital means the sum of the following (as determined in accordance with GAAP): (i) the par or stated value of outstanding common

stock; (ii) the par or stated value of outstanding perpetual, noncumulative preferred stock; (iii) paid-in capital; and (iv) retained earnings.

The statutory definition of core capital for the Enterprises does not reflect any specific considerations for deferred tax assets (DTAs). DTAs are recognized based on the expected future tax consequences related to existing temporary differences between the financial reporting and tax reporting of existing assets and liabilities given established tax rates. In general, DTAs are considered a component of capital because these assets are capable of absorbing and offsetting losses through the reduction to taxes. However, DTAs may provide minimal to no loss-absorbing capability during a period of stress as recoverability (via taxable income) may become uncertain.

In 2008, during the financial crisis, both Enterprises concluded that the realization of existing DTAs was uncertain based on estimated future taxable income. Accordingly, both Enterprises established partial valuation allowances on DTAs. A valuation allowance on DTAs is typically established when all or a portion of DTAs is unlikely to be realized considering projections of future taxable income, resulting in a non-cash charge to income and a reduction to the retained earnings component of capital. Fannie Mae established a partial valuation allowance on DTAs of $30.8 billion in 2008, which was a major contributor to the overall capital reduction of $66.5 billion at Fannie Mae in 2008. Similarly, Freddie Mac established a partial valuation allowance on DTAs of $22.4 billion in 2008, which was also a major contributor to the overall capital reduction of $71.4 billion at Freddie Mac in 2008.

Other financial regulators recognize the limited loss absorbing capability of DTAs, and therefore limit the amount of DTAs that may be included in CET1 capital.

Under Basel III guidance, federally regulated bank holding companies are subject to threshold deductions, up to and including full deductions, associated with DTAs related to temporary timing differences.

Basel III capital rules also include accumulated other comprehensive income (AOCI) in the determination of regulatory Tier 1 capital. For the Enterprises, the statutory definition of core capital does not include AOCI. Generally, AOCI primarily consists of unrealized gains and losses on available-for-sale securities, which are measured at fair value on the Enterprises' consolidated balance sheets. Consequently, AOCI can be positive or negative depending on the prevailing market conditions for the Enterprises' available-for-sale securities. For example, at the end of 2008, AOCI at Fannie Mae and Freddie Mac was negative $7.7 billion and negative $26.4 billion, respectively. As a result, by excluding AOCI from core capital, an Enterprise may be adequately capitalized for regulatory purposes, but insolvent under GAAP.

Total capital, using the statutory definition, means the sum of the following: (1) core capital of an Enterprise; (2) a general allowance for foreclosure losses, which (i) shall include an allowance for portfolio mortgage losses, non-reimbursable foreclosure costs on government claims, and an allowance for liabilities reflected on the balance sheet for the Enterprise for estimated foreclosure losses on mortgage-backed securities; and (ii) shall not include any reserves of the Enterprise made or held against specific assets; and (3) any other amounts from sources of funds available to absorb losses incurred by the Enterprise, that the Director by regulation determines are appropriate to include in determining total capital.

Question 35: FHFA is soliciting comments on the capital treatment of DTAs and AOCI. How should FHFA incorporate the potential impact of DTAs and AOCI, given that FHFA cannot change the definition of core capital as provided in the statute? What additional modifications to the proposed capital requirement for DTAs should FHFA consider, and why? What additional modifications to the proposed capital requirement for AOCI should FHFA consider, and why? Is AOCI a suitable other source of loss-absorbing capacity for purposes of the statutory definition of total capital?

Question 36: FHFA is soliciting comments on the capital treatment of outstanding perpetual, noncumulative preferred stock. Given that FHFA cannot change the definition of core capital as provided in the statute, what modifications should FHFA consider and why?

Question 37: Given that loss reserves are for expected losses and capital is for unexpected losses, FHFA is soliciting comments on the appropriateness of including loss reserves in the definition of total capital. Should loss reserves be added to the proposed risk-based capital requirements in order to offset their inclusion in total capital?

F. Temporary Adjustments to Minimum Leverage and Risk-Based Capital Requirements

FHFA has additional existing regulatory flexibility so that capital requirements can be adjusted by order to address periods of heightened risk. While the proposed risk-based and leverage capital requirements may be amended by subsequent regulation, revising them would generally require soliciting and incorporating public input and would likely be time-intensive. This process would make it difficult for the capital requirements to quickly address new developments and anticipate rapidly emerging risks.

The current provisions authorizing FHFA to adjust both risk-based and minimum leverage capital requirements allow FHFA to respond more quickly to market and business developments and require greater retention of capital when circumstances warrant it. This additional flexibility also mitigates the pro-cyclicality of risk-based capital standards.

Risk-based capital requirements may fail to adequately capture the risks facing an institution. For example, any capital framework that depends on models to assign risk-weights will be subject to model estimation error risk. In addition, such an approach may not adequately account for the risk related to a new asset or product. As discussed earlier, new or previously unassigned activities would be given an interim risk-weighting under the proposed risk-based capital requirements. The lack of historical performance data for new products increases the risk that an interim risk-weight assessment may prove inadequate and that this risk would be compounded by growth of the new product.

Risk-based capital requirements are sensitive to changes in house prices because risk weights are tied to LTV ratios. During periods of rapid house price appreciation, risk-based capital requirements for the Enterprises will fall as LTVs fall. As the experience from the most recent financial crisis reflects, housing downturns are often preceded by rapid house price appreciation. This means that the risk-based capital requirements, considered in isolation, can be pro-cyclical and can lead to the shedding of loss-absorbing capital ahead of a period of sustained credit losses.

HERA anticipated the need for flexibility in developing capital standards and granted FHFA discretion to make capital adjustments for both risk-based capital requirements and leverage requirements in order to maintain the safety and soundness of

the Enterprises. In 2011, FHFA promulgated regulations describing how FHFA could implement a temporary increase through order in the leverage requirements under HERA.[48] Under the regulation, FHFA may consider different factors in making a determination to increase minimum leverage capital requirements, including the value of Enterprise assets; the Enterprises' ability to access liquidity as well as credit and market risk; initiatives that entail heightened risks; current and potential declines in Enterprise capital; housing finance market conditions; and other conditions as described by the Director.

This authority provides FHFA with the flexibility to adjust leverage requirements in an overheating mortgage market when risk-based capital requirements may otherwise lead to the shedding of loss-absorbing capital. This authority also provides FHFA with the flexibility, using the leverage ratio, to address the potential inadequacy of capital requirements for new products and it provides FHFA with a way to mitigate a latent modeling error on an interim basis while risk-based capital requirements are being corrected.

FHFA also possesses statutory flexibility with respect to the risk-based capital requirements themselves. While the authority to increase minimum leverage capital requirements can mitigate some of the pro-cyclicality and other issues inherent in a model-based set of standards, it can only do so indirectly by requiring more capital to be held across all asset classes to which the leverage requirement applies. For this reason, FHFA wishes to highlight its statutory authority to adjust the risk-based capital

[48] 12 CFR part 1225. "FHFA is responsible for ensuring the safe and sound operation of regulated entities. In furtherance of that responsibility, this part sets forth standards and procedures FHFA will employ to determine whether to require or rescind a temporary increase in the minimum capital levels for a regulated entity or entities pursuant to 12 U.S.C. 4612(d)."

requirements for particular asset classes directly during periods of heightened risk, when the risk-based capital requirements might otherwise be inadequate. Elaborating on the earlier example, sustained single-family house price appreciation may suggest that the single-family housing sector is overheating ahead of a downturn. In this scenario, home prices may be artificially inflated and LTV ratios would fall, allowing the Enterprises to release capital. FHFA's ability to step in to adjust capital treatment for single-family loans, or to augment the single-family businesses' going-concern buffer, during this period would directly address the risk that risk-based capital treatment for these assets may become inadequate.

Authority to adjust the minimum leverage capital requirement can address this risk as well, but does so in a less targeted way. Relying on the minimal leverage capital adjustment exclusively may lead to raising Enterprise-wide capital requirements when a more narrow adjustment would suffice from a safety and soundness perspective. This overly-broad approach may lead to skewed Enterprise decision-making as the leverage requirement becomes greater and approaches becoming the binding capital allocation restraint. This concern is discussed in greater detail in the section II.D.

FHFA's existing authority to adjust risk-based capital requirements comes from the Safety and Soundness Act. Section 1362(e) provides FHFA with authority to implement additional capital requirements with respect to any product or activity by the Enterprises "as the Director considers appropriate to ensure that the regulated entity operates in a safe and sound manner with sufficient capital and reserves to support the risks that arise in the operations and management of the regulated entity."[49] This

[49] 12 U.S.C. 4612(e).

authority may be exercised through order, as opposed to regulation, and thus can be implemented swiftly should the need to do so arise.

Question 38: FHFA is soliciting comments on the advantages and disadvantages of the existing authority to temporarily increase minimum leverage requirements, in particular with respect to the view that use of this authority can serve a countercyclical role across economic cycles. FHFA is requesting data and supplementary analysis that would support alternative perspectives.

Question 39: Commenters are asked to discuss the advantages and disadvantages of adjusting risk-based capital requirements by order during periods of heightened risk.

Question 40: FHFA is soliciting views on how best to identify periods of heightened market and Enterprise risk. In particular, what economic indicators or other triggers should be considered in determining when to require an adjustment to capital requirements and how such adjustments might impact capital planning?

III. Paperwork Reduction Act

The Paperwork Reduction Act (PRA) (44 U.S.C. 3501 *et seq*.) requires that regulations involving the collection of information receive clearance from the Office of Management and Budget (OMB). The proposed rule contains no such collection of information requiring OMB approval under the PRA. Therefore, no information has been submitted to OMB for review.

IV. Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq*.) requires that a regulation that has a significant economic impact on a substantial number of small entities, small businesses, or small organizations must include an initial regulatory flexibility analysis describing the regulation's impact on small entities. FHFA need not undertake such an analysis if the agency has certified that the regulation will not have a significant economic impact on a substantial number of small entities. 5 U.S.C. 605(b). FHFA has considered the impact of the proposed rule under the Regulatory Flexibility Act. The General Counsel of FHFA certifies that the proposed rule, if adopted as a final rule, would not have a significant economic impact on a substantial number of small entities because the proposed rule is applicable only to the Enterprises, which are not small entities for purposes of the Regulatory Flexibility Act.

V. The Proposed Rule Text

List of Subjects

12 CFR Part 1206

Federal home loan banks, Reporting and recordkeeping requirements.

12 CFR Part 1240

Capital, Credit, Enterprise, Investments, Reporting and recordkeeping requirements.

12 CFR Part 1750

Banks, banking, Capital classification, Mortgages, Organization and functions (Government agencies), Risk-based capital, Securities.

Authority and Issuance

For the reasons stated in the preamble, under the authority of 12 U.S.C. 4511, 4513, 4514, 4526 and 4612, FHFA proposes to amend Chapters XII and XVII, of Title 12 of the Code of Federal Regulations as follows:

CHAPTER XII—FEDERAL HOUSING FINANCE AGENCY

SUBCHAPTER A— ORGANIZATION AND OPERATIONS

PART 1206—ASSESSMENTS

1. Amend § 1206.2 by revising the definition of "*Total exposure*" to read as follows:

§ 1206.2 Definitions.

*** * * * ***

Total exposure means the sum of total assets as determined according to GAAP, and off-balance sheet guarantees related to securitization activities that are used to

calculate the quarterly minimum leverage capital requirement of the Enterprise under 12 CFR part 1240.

*** * * * ***

SUBCHAPTER C— ENTERPRISES

2. Add part 1240 to Subchapter C to read as follows:

PART 1240—ENTERPRISE CAPITAL REQUIREMENTS

Sec.

1240.1 Definitions and abbreviations.
1240.2 Board oversight of capital adequacy.
1240.3 Reporting procedure and timing.
1240.4 Risk-based capital requirement components.
1240.5 Single-family whole loans, guarantees, and related securities risk-based capital requirement components.
1240.6 Single-family whole loans and guarantees credit risk capital requirement methodology.
1240.7 Loan segments for single-family whole loans and guarantees credit risk capital requirement.
1240.8 Base credit risk capital requirement for single-family whole loans and guarantees.
1240.9 Risk multipliers for single-family whole loans and guarantees.
1240.10 Gross credit risk capital requirement for single-family whole loans and guarantees.
1240.11 Loan-level credit enhancement impact on gross credit risk capital requirement.
1240.12 Counterparty Haircut for single-family whole loans and guarantees.
1240.13 Net credit risk capital requirement for single-family whole loans and guarantees.
1240.14 Single-family credit risk transfer capital relief for single-family whole loans and guarantees.
1240.15 Calculation of capital relief from a single-family CRT.
1240.16 Calculation of total capital relief for single-family whole loans and guarantees.
1240.17 Market risk capital requirement for single-family whole loans.
1240.18 Market risk capital requirement for single-family securities.
1240.19 Operational risk capital requirement for single-family whole loans and guarantees.
1240.20 Operational risk capital requirement for single-family securities.
1240.21 Going-concern buffer requirement for single-family whole loans and guarantees.
1240.22 Going-concern buffer requirement for single-family securities.
1240.23 Aggregate risk-based capital requirement for single-family whole loans, guarantees, and related securities.
1240.24 Private-label securities risk-based capital requirement components.
1240.25 Credit risk capital requirement for a PLS.

1240.26 Market risk capital requirement for a PLS.
1240.27 Operational risk capital requirement for a PLS.
1240.28 Going-concern buffer requirement for a PLS.
1240.29 Aggregate risk-based capital requirement for PLS.
1240.30 Multifamily whole loans, guarantees, and related securities risk-based capital requirement components.
1240.31 Multifamily whole loans and guarantees credit risk capital requirement methodology.
1240.32 Loan segments for multifamily whole loans and guarantees credit risk capital requirement.
1240.33 Base credit risk capital requirement for multifamily whole loans and guarantees.
1240.34 Risk multipliers for multifamily whole loans and guarantees.
1240.35 Gross credit risk capital requirement for multifamily whole loans and guarantees.
1240.36 Net credit risk capital requirement for multifamily whole loans and guarantees.
1240.37 Multifamily credit risk transfer capital relief for multifamily whole loans and guarantees.
1240.38 Calculation of capital relief for a multifamily CRT.
1240.39 Multifamily whole loans market risk capital requirement.
1240.40 Multifamily securities market risk capital requirement.
1240.41 Operational risk capital requirement for multifamily whole loans and guarantees.
1240.42 Operational risk capital requirement for multifamily securities.
1240.43 Going-concern buffer requirement for multifamily whole loans and guarantees.
1240.44 Going-concern buffer requirement for multifamily securities.
1240.45 Aggregate risk-based capital requirement for multifamily whole loans, guarantees, and related securities.
1240.46 Non-Enterprise and non-Ginnie Mae commercial mortgage backed securities risk-based capital requirement.
1240.47 Other assets and exposures risk-based capital requirement.
1240.48 Unassigned Activities.
1240.49 Aggregate risk-based capital requirement calculation.
1240.50 Minimum leverage capital requirement: 2.5 percent alternative.
1240.51 Minimum leverage capital requirement: Bifurcated alternative.

Authority: 12 U.S.C. 4511, 4513, 4514, 4526, 4612.

§ 1240.1 Definitions and abbreviations.

(a) The definitions below are used to define terms for purposes of this part.

Amortization term refers to the time period over which the loan is contractually scheduled to amortize at origination.

Basis points (bps) means more than one basis point where a basis point equals one hundredth of one percent.

Charter Act(s) means the Federal National Mortgage Association Charter Act, 12 U.S.C. 1716, *et seq*., and/or the Federal Home Loan Mortgage Corporation Act, 12 U.S.C. 1451 note, *et seq*.

Charter-level coverage means mortgage insurance coverage levels that meet the minimum requirements of the Enterprises' Charter Acts for loans with a loan-to-value ratio (LTV) greater than 80%.

CMBS means commercial mortgage backed securities.

CMOs means collateralized mortgage obligations held in portfolio that are collateralized by an Enterprise or Ginnie Mae MBS.

Core capital has the meaning provided at 12 U.S.C. 4502(7).

(i) Core capital is the sum of (as determined in accordance with generally accepted accounting principles (GAAP))

(A) The par or stated value of outstanding common stock;

(B) The par or stated value of outstanding perpetual, noncumulative preferred stock;

(C) Paid-in capital; and

(D) Retained earnings.

(ii) Core capital does not include any amounts the Enterprise could be required to pay, at the option of investors, to retire capital instruments.

Counterparty risk haircut (*CPHaircut*) means a reduction in the contractual payments from a counterparty due to the risk that the counterparty is unable to meet its obligations.

Coverage Percent or Coverage Percentage means the percentage provided as the benefit under a mortgage insurance policy of the sum of UPB, lost interest and foreclosure costs.

Credit risk means the risk of financial loss to an Enterprise from nonperformance by borrowers or other obligors on instruments in which an Enterprise has a financial interest.

Credit risk transfer (CRT) means the transfer of credit risk from an Enterprise to an unaffiliated third party or parties through capital markets and loss sharing transactions.

Days means calendar days.

Deferred tax assets (DTA) mean assets on the balance sheet that may be used to reduce taxable income.

Deferred tax liabilities (DTL) mean tax liabilities deferred to a future period.

Delinquent means one or more missed scheduled payments.

Enterprise guarantee means a credit guarantee from an Enterprise.

Ginnie Mae means the Government National Mortgage Association.

Government guarantee means a credit guarantee from the Federal Housing Administration (FHA), United States Department of Agriculture (USDA), or the Veterans Administration (VA).

Guide-level coverage means mortgage insurance coverage levels, specified by an Enterprise's Seller Guide, that provide higher levels of coverage than required by an

Enterprise's Charter Act for loans with LTVs greater than 80%. Guide-level coverage is also referred to as standard coverage.

Loan-level credit enhancement means a credit guarantee on an individual single-family whole loan. An Enterprise primarily uses a loan-level credit enhancement to meet the requirements of its Charter Act for a conventional loan with LTV greater than 80%. A conventional loan, also known as a conventional mortgage, has the meaning provided in the Enterprises' Charter Acts at 12 U.S.C. 1717(b)(2) (Fannie Mae) and 12 U.S.C. 1451(i) (Freddie Mac).

Market risk means the risk that the market value, or estimated fair value if market value is not available, of an Enterprise's portfolio will decline as a result of changes in interest rates, spreads, foreign exchange rates, or equity or commodity prices.

MBS means a mortgage backed security issued by an Enterprise or Ginnie Mae.

Mortgage insurance (MI) means a loan-level credit enhancement provided by an insurance company.

Multifamily property means a property with five or more residential units.

Multifamily whole loan means a whole loan secured by a mortgage on a multifamily property.

Non-trust assets mean the total assets of an Enterprise as determined in accordance with GAAP plus off-balance sheet guarantees related to securitization activities minus Trust assets.

Off-balance sheet guarantees means guarantees of mortgage loan securitizations and resecuritizations transactions, and other guaranty commitments over which an Enterprises does not have control.

Operational risk means the risk of loss resulting from inadequate or failed internal processes, people, or systems, or from external events.

Original means at the origination of the loan.

Participation certificate means an MBS issued by Freddie Mac.

Private-label security (PLS) means a single-family residential mortgage-backed security issued by an entity other than Fannie Mae, Freddie Mac, or Ginnie Mae.

PLS wrap means a PLS resecuritized with an Enterprise guarantee.

Refi Plus means Fannie Mae's streamlined refinance program or other similar refinance programs that the Director determines should receive the same capital treatment.

Relief Refi means Freddie Mac's streamlined refinance program, or other similar refinance programs that the Director determines should receive the same capital treatment.

Reporting date means the date of the portfolio used for risk-based capital and minimum capital calculations.

Single-family property means a property with one-to-four-family residential units.

Single-family whole loan means a whole loan secured by a mortgage on a single-family property.

Spread duration means a measure of the sensitivity of an asset's expected price to changes in the asset's spread.

Spread risk means the risk of a loss in value of an asset relative to a risk free or funding benchmark due to changes in perceptions of performance or liquidity.

Supplemental loan means a multifamily loan made to a borrower for a property for which the borrower has previously received a loan. There can be more than one supplemental loan.

Total assets mean the total assets of an Enterprise as determined in accordance with GAAP.

Total capital has the meaning provided at 12 U.S.C. 4502(23). It is the sum of the following:

(i) The core capital of an Enterprise.

(ii) A general allowance for foreclosure losses, which

(A) shall include an allowance for portfolio mortgage losses, nonreimbursable foreclosure costs on government claims, and an allowance for liabilities reflected on the balance sheet for the Enterprise for estimated foreclosure losses on mortgage backed securities; and

(B) shall not include any reserves of the Enterprise made or held against specific assets.

(iii) Any other amounts from sources of funds available to absorb losses incurred by the Enterprise, that the Director by regulation determines are appropriate to include in determining total capital.

Tranche means all securitization exposures associated with a CRT that have the same seniority.

Trust assets means Fannie Mae mortgage-backed securities or Freddie Mac participation certificates held by third parties, and off-balance sheet guarantees related to securitization activities.

Whole loan means a single loan that a lender has issued to a borrower or borrowers.

(b) The abbreviations below are used as short forms for terms used in calculations in this part.

ATCH	Attachment point for a tranche
$BaseCapital_{bps}$	Base credit risk capital requirement in basis points
$CapRelief_{\$}$	Capital relief in dollars for an entire CRT
$CM_{\%}$	Capital markets risk relief percentage for single-family CRTs
CEMultiplier	Credit enhancement multiplier
$CMTCRC_{bps}$	Tranche credit risk capital associated with the single-family CRT capital markets transaction, in basis points
$CntptyCollat_{\$}$	Counterparty collateral in dollars
$CntptyShare_{\%}$	Counterparty quota share in percent
$CntptyCreditRisk_{bps}$	Counterparty credit risk capital in basis points
$CntptyCreditRisk_{\$}$	Counterparty credit risk capital in dollars
$CntptyExposure_{bps}$	Counterparty exposure in basis points
$CntptyExposure_{\$}$	Counterparty exposure in dollars
CombRiskMult	Combined risk multiplier
$CreditAndMarketRiskCapReq_{\$}$	Credit and market risk capital requirement in dollars for a CMBS

$CreditAndMarketRiskCapReq_{\$\_CMBS}$	Credit and market risk capital requirement in dollars in aggregate for all CMBSs
$CreditRiskCapReq_{\$}$	Credit risk capital requirement in dollars
$CreditRiskCapReq_{bps}$	Credit risk capital requirement in basis points
$CRTLT_{\%}$	CRT loss timing factor in percent
DTCH	Detachment point for a tranche
$GCBufferReq_{\$}$	Going-concern buffer requirement in dollars
$GCBufferReq_{\$\_CMBS}$	Going-concern buffer requirement in dollars in aggregate for all CMBS.
$GCBufferReq_{\$\_MD}$	Going-concern buffer requirement in dollars for all municipal debt
$GCBufferReq_{\$\_MFMBS}$	Going-concern buffer requirement in dollars for all multifamily MBS
$GCBufferReq_{\$\_MFWL}$	Going-concern buffer requirement in dollars for all multifamily family whole loans and guarantees
$GCBufferReq_{\$\_SFREV}$	Going-concern buffer requirement in dollars for all reverse mortgage loans and securities
$GCBufferReq_{\$\_SFWL}$	Going-concern buffer requirement in aggregate for all single-family whole loans and guarantees
$GrossCreditRiskCapReq_{bps}$	Gross credit risk capital requirement in basis points
K_G	The weighted-average total capital requirement of the underlying exposures in a PLS

$LenderCapital_{\$}$	The portion of capital associated with the lender's exposure
$LS_{\%}$	Contractual loss sharing risk relief percentage for single-family CRTs
$LSTCRC_{bps}$	Tranche credit risk capital associated with the single-family CRT loss sharing transaction, in basis points
$MarketRiskCapReq_{bps}$	Market risk capital requirement in basis points
$MarketRiskCapReq_{\$}$	Market risk capital requirement in dollars
$MarketRiskCapReq_{\$\_MD}$	Market risk capital requirement in dollars for all municipal debt
$MarketRiskCapReq_{\$\_MFMBS}$	Market risk capital requirement in dollars for all multifamily MBS
$MarketRiskCapReq_{\$\_MFWL}$	Market risk capital requirement in dollars for all multifamily whole loans and guarantees
$MarketRiskCapReq_{\$\_SFREV}$	Market risk capital requirement in dollars for all reverse mortgage loans and securities
$MarketRiskCapReq_{\$\_SFWL}$	Market risk capital requirement in dollars for all single-family whole loans and guarantees
$MF\_LS_{\%}$	Lender loss sharing risk relief percentage for multifamily CRTs
$MF\_MTLS_{\%}$	Multiple tranche loss sharing risk relief percentage for multifamily CRTs
$MF\_S_{\%}$	Capital market risk relief percentage for multifamily CRTs
$MTLSTCRC_{bps}$	Capital relief from multiple tranche loss sharing

$NetCreditRiskCapReq_{bps}$	Net credit risk capital requirement in basis points
$NetCreditRiskCapReq_{\$}$	Net credit risk capital requirement in dollars
$NetCreditRiskCapReq_{\$\_MFWL}$	Net credit risk capital requirement in dollars for all multifamily whole loans and guarantees
$NetCreditRiskCapReq_{\$\_SFWL}$	Net credit risk capital requirement in dollars for all single-family whole loans and guarantees
$OperationalRiskCapReq_{bps}$	Operational risk capital requirement in basis points
$OperationalRiskCapReq_{\$}$	Operational risk capital requirement in dollars
$OperationalRiskCapReq_{\$\_MD}$	Operational risk capital requirement in dollars for all municipal debt
$OperationalRiskCapReq_{\$\_MFMBS}$	Operational risk capital requirement in dollars for all multifamily MBS.
$OperationalRiskCapReq_{\$\_MFWL}$	Operational risk capital requirement in dollars for all multifamily whole loans and guarantees
$OperationalRiskCapReq_{\$\_SFREV}$	Operational risk capital requirement in dollars for all reverse mortgage loans and securities
$OperationalRiskCapReq_{\$\_SFWL}$	Operational risk capital requirement in dollars for all single-family whole loans and guarantees
$PGCRC_{bps}$	Credit risk capital on a pool group of whole loans and guarantees underlying a CRT, in basis points
$PGEL_{bps}$	Lifetime net expected losses on a pool group of whole loans and guarantees underlying the CRT, in basis points

$PGCapRelief_{bps}$	Capital relief for a pool group in basis points
$PGUPB_{\$}$	A pool group's aggregate unpaid principal balance
$RiskBasedCapReq_{\$\_CMBS}$	Risk-based capital requirement in dollars in aggregate for all CMBS
$RiskBasedCapReq_{\$\_DTA}$	Risk-based capital requirement in dollars in aggregate for all deferred tax assets
$RiskBasedCapReq_{\$\_MD}$	Risk-based capital requirement in dollars for all municipal debt
$RiskBasedCapReq_{\$\_MFWLGS}$	Risk-based capital requirement in dollars for all multifamily whole loans, guarantees, and related securities
$RiskBasedCapReq_{\$\_PLS}$	Risk-based capital requirement in dollars for all single-family PLS
$RiskBasedCapReq_{\$\_SFREV}$	Risk-based capital requirement in dollars for all reverse mortgage loans and securities
$RiskBasedCapReq_{\$\_SFWLGS}$	Risk-based capital requirement in dollars for all single-family whole loans, guarantees, and related securities
$RiskBasedCapReq_{\$\_TOTAL}$	Total risk-based capital requirement in dollars
RW	Risk weight of a PLS
SpreadDuration	Spread duration for a given loan or security
$STCRC_{bps}$	Capital relief from securitization
$TCRC_{bps}$	Tranche credit risk capital

$TotalCapRelief_{\$\_SFWL}$	Total capital relief across all single-family CRTs
$TotalCapRelief_{\$\_MFWL}$	Total capital relief across all multifamily CRTs
TotalCombRiskMult	Total combined risk multiplier
UncapTotalCombRiskMult	Uncapped total combined risk multiplier
$UPB_{\$}$	Unpaid principal balance in dollars

§ 1240.2 Board oversight of capital adequacy.

(a) The board of directors of each Enterprise is responsible for overseeing that the Enterprise maintains capital at a level that is sufficient to ensure the continued financial viability of the Enterprise and that equals or exceeds the capital requirements contained in this part.

(b) Nothing in this part permits or requires an Enterprise to engage in any activity that would otherwise be inconsistent with its Charter Act or the Safety and Soundness Act, 12 U.S.C. 4501 *et seq.*

§ 1240.3 Reporting procedure and timing.

(a) *Capital Report.* Each Enterprise shall file a capital report with the Director every quarter. The capital report must be made using the format separately provided to the Enterprises by FHFA. The report shall include, but not be limited to, the following:

(1) The minimum capital requirement as calculated as of the end of each quarter.

(2) The risk-based capital requirement as calculated as of the end of each quarter.

(b) *Timing.* The capital report shall be submitted not later than sixty days after quarter end or at such other time as the Director requires.

(c) *Approval*. The capital report must be approved by the Chief Risk Officer and the Chief Financial Officer of an Enterprise prior to submission to FHFA.

(d) *Adjustment*. In the event an Enterprise makes an adjustment to its financial statements for a quarter or a date for which information was provided pursuant to this part, which would cause an adjustment to a capital report, an Enterprise shall file with the Director an amended capital report not later than 15 days after the date of such adjustment.

(e) *Additional reports*. The Director may request from an Enterprise additional reports, information, and data, as appropriate, from time to time.

§ 1240.4 Risk-based capital requirement components.

Each Enterprise shall maintain at all times total capital in an amount at least equal to the sum of the risk-based capital requirements for:

(a) Single-family whole loans, guarantees, and related securities as provided in §§ 1240.5 through 1240.23 of this part;

(b) Private-label securities (PLS) as provided in §§ 1240.24 through 1240.29 of this part;

(c) Multifamily loans, guarantees, and related securities as provided in §§ 1240.30 through 1240.45 of this part;

(d) Non-Enterprise and non-Ginnie Mae Commercial Mortgage Backed Securities (CMBS) as provided in § 1240.46 of this part;

(e) Other assets and exposures as provided in § 1240.47 of this part; and

(f) Unassigned activities as provided in § 1240.48 of this part.

§ 1240.5 Single-family whole loans, guarantees, and related securities risk-based capital requirement components.

The risk-based capital requirement for single-family whole loans, guarantees, and related securities is the cumulative total of the following capital requirements:

(a) A credit risk capital requirement as provided in §§ 1240.6 through 1240.16 of this part;

(b) A market risk capital requirement for single-family whole loans and securities having market exposure as provided in §§ 1240.17 through 1240.18 of this part;

(c) An operational risk capital requirement as provided in §§ 1240.19 through 1240.20 of this part; and

(d) A going-concern buffer requirement as provided in §§ 1240.21 through 1240.22 of this part.

§ 1240.6 Single-family whole loans and guarantees credit risk capital requirement methodology.

(a) The methodology for calculating the credit risk capital requirement for single-family whole loans and guarantees uses tables to determine the base credit risk capital requirement, risk factor multipliers to adjust the base credit risk capital requirement for risk factor variations not captured in the base credit risk requirement, credit enhancement multipliers to reduce the capital requirement due to the presence of loan-level credit enhancement, and reductions in credit enhancement benefits due to counterparty risk. The methodology also provides for a reduction in the credit risk capital requirement for single-family whole loans and guarantees subject to credit risk transfer (CRT) transactions.

(b) The steps for calculating the credit risk capital requirement for single-family whole loans and guarantees are as follows:

(1) Identify the loan data needed for the calculation of the single-family whole loans and guarantees credit risk capital requirement.

(2) Assign each loan to a single-family loan segment, as specified in § 1240.7 of this part.

(3) Determine the base credit risk capital requirement using the assigned single-family loan segment, as specified in § 1240.8 of this part.

(4) Determine the loan's total combined risk multiplier using the assigned single-family loan segment and risk factor multipliers, as specified in § 1240.9 of this part.

(5) Determine the loan's gross credit risk capital requirement using the total combined risk multiplier and the base capital, as specified in § 1240.10 of this part.

(6) Determine the reduction of capital from the gross credit risk capital requirement due to the presence of loan-level credit enhancement benefit, as specified in § 1240.11 of this part.

(7) Determine the reduction in loan-level credit enhancement benefit due to counterparty risk for the credit enhancement counterparty, as specified in § 1240.12 of this part.

(8) Determine the net credit risk capital requirement by reducing for the loan-level credit enhancement benefit due to counterparty risk for the credit enhancement counterparty, as specified in § 1240.13 of this part.

(9) Determine the aggregate net credit risk capital requirement for single-family whole loans and guarantees, as specified in § 1240.13 of this part.

(10) Determine the capital relief from single-family CRTs, as specified in §§ 1240.14 through 1240.16 of this part.

(c) The credit risk capital requirement applies to any Enterprise conventional single-family whole loan and guarantee with exposure to credit risk.

(d) Table 1 lists the data needed for the calculation of the single-family whole loans and guarantees credit risk capital requirement. Table 1 contains variable names, definitions, acceptable values, and treatments for missing or unacceptable values.

Table 1: Single-family Whole Loans and Guarantees Data Inputs

Variable	**Definition / Logic**	**Acceptable Values**	**Treatment of Missing or Unacceptable Values**
Back-end Debt-to-Income (DTI) Ratio	DTI is calculated as the ratio of debt to income. Debt consists of the borrowers' monthly mortgage payments for principal and interest, mortgage-related obligations (property taxes, Home Owners Association (HOA) fees, condominium fees, cooperative fees, and insurance), current debt obligations, alimony, and child support. Income consists of the total pre-tax monthly income of all borrowers as determined at the time of origination. DTI at origination should be used for Home Affordable Modification Program (HAMP) and HAMP-like modifications.	0% < DTI < 100%	Set to 42%
Loan-level Credit Enhancement Types	Types of loan-level credit enhancement that provide credit protection to the Enterprises for conventional single-family whole loans. Loan-level credit enhancements are typically used to meet the Charter	Participation Agreements, Repurchase or replacement Agreements, Recourse and Indemnification Agreements,	Not Applicable

Variable	Definition / Logic	Acceptable Values	Treatment of Missing or Unacceptable Values
	requirements for loans with LTVs greater than 80%.	Mortgage Insurance, Not Applicable	
Streamlined Refi	Indicator for a loan that was refinanced through one of an Enterprise's streamlined refinance programs, including, for example Home Affordable Refinance Program (HARP), Relief Refi and Refi-Plus.	Yes, No	No
Interest-Only (IO)	A loan that requires only payment of interest without any principal amortization during all or part of the loan term.	Yes, No	Yes
Loan Age	Loan age is calculated as the difference in months between the origination month and the month of the reporting date.	0 months <= Loan Age <= 500 months	If the difference in months between the origination month and the month of the reporting date is negative, set Loan Age to 0. If the difference is greater than 500, set Loan Age to 500.
Loan Documentation Level	The level of income documentation used to underwrite the loan.	No Documentation, Low Documentation, Full Documentation	Set to No Documentation
Loan Purpose	Purpose of the mortgage at origination.	Purchase, Cashout Refinance, Rate/Term Refinance	Set to Cashout Refinance
Mark-to-Market Loan-to-Value (MTMLTV) Ratio	MTMLTV is calculated as UPB / (($UPB_{Original}$/OLTV) x house_price_growth_factor). Special instructions for	0% < MTMLTV <= 300%	Set MTMLTV to 300% if any of the following conditions apply:

Variable	Definition / Logic	Acceptable Values	Treatment of Missing or Unacceptable Values
	determining house_price_growth_factor: • Use the FHFA Purchase Only State-Level House Price Index (HPI). • Use the USA HPI for Puerto Rico and the Virgin Islands. • Use the Hawaii HPI for Guam. • If a loan was originated before 1991, use an Enterprise's proprietary HPI. • If an HPI series ends before the reporting date, keep the HPI series constant (flat line). • Use geometric interpolation to convert quarterly HPI data to monthly HPI data. • house_price_growth_factor is equal to the ratio of HPI at the reporting date (or latest available HPI) to HPI at the loan's origination date.		• The calculated MTMLTV is less than or equal to 0. • The calculated MTMLTV is greater than 300%.
Market Value	The value of the loan used to inform an Enterprise's fair value disclosures.		Set to UPB
Months since Last Delinquency	For re-performing loans, months since last delinquency is calculated as the difference in months between the ending date of the last delinquency period and the reporting date.	Non-negative integer	Set to 0
Months since Last Modification	For modified loans, months since last modification is calculated as the difference in months between the effective date of the modification and	Non-negative integer	Set to 0

Variable	Definition / Logic	Acceptable Values	Treatment of Missing or Unacceptable Values
	the reporting date.		
Mortgage Insurance (MI) Cancellation Feature	Mortgage insurance is cancellable if coverage can or will terminate before the maturity date of the mortgage (e.g. due to the Homeowners Protection Act). Mortgage insurance is non-cancellable if the coverage extends to the maturity of the mortgage.	Cancellable, Non-Cancellable	Set to Cancellable
MI Coverage Percent	The percentage of the sum of UPB, lost interest and foreclosure costs used to determine the benefit under a mortgage insurance policy.	0% <= MI Coverage Percent <= 100%	Set to 0%
Number of Borrowers	The number of borrowers on the mortgage note.	Multiple borrowers, One borrower	Set to One borrower
Number of Missed Payments	For delinquent loans, the number of missed payments, measured in months, as of the reporting date.	Non-negative integer	Set to 7
Occupancy Type	The borrowers' intended use of the property.	Investment, Owner Occupied, Second Home	Set to Investment
Original Credit Score	The borrower's credit score as of the origination date. If there are credit scores from multiple credit repositories for a borrower, use the following logic to determine a single Original Credit Score: • If there are credit scores from two repositories, take the lower credit score. • If there are credit scores from three repositories, use the middle credit score. • If there are credit scores from three repositories and two of the credit scores are	300 <= Original Credit Score <= 850	Set to 600

Variable	Definition / Logic	Acceptable Values	Treatment of Missing or Unacceptable Values
	identical, use the identical credit score. If there are multiple borrowers, use the following logic to determine a single Original Credit Score: • Using the logic above, determine a single credit score for each borrower. • Select the lowest single credit score across all borrowers.		
Original Loan-to-Value (OLTV)	OLTV is calculated as the ratio between the original loan amount and the lesser of appraised value or sale price.	0% < OLTV <= 300%	Set OLTV to 300% if any of the following conditions apply: • The calculated OLTV is less than or equal to 0. • The calculated OLTV is greater than 300%. • Both the sales price and appraised value are missing.
Origination Channel	Source of the loan.	Retail, Third-Party Origination (TPO) (includes Broker and Correspondent)	Set to TPO
Payment Change from Modification	The change in the monthly payment resulting from a permanent loan modification. Payment Change from	-80% < Payment Change from Modification < 50%	Set to 0% if missing. If the change in the monthly payment

Variable	Definition / Logic	Acceptable Values	Treatment of Missing or Unacceptable Values
	Modification is calculated as: 100%*(post-modification monthly payment / pre-modification monthly payment - 1). If the modified loan has an adjustable or step rate feature, the post-modification monthly payment is calculated using the initial modified rate. The Payment Change from Modification is not updated subsequent to any rate resets.		resulting from a permanent loan modification is greater than or equal to 50%, set Payment Change from Modification to 49%. If the change in the monthly payment resulting from a permanent loan modification less than or equal to -80%, set Payment Change from Modification to -79%.
Previous Maximum Delinquency	For re-performing loans, the maximum number of months delinquent at any point in the prior 36 months.	Non-negative integer	Set to 6 months
Product Type	The mortgage product type as of the loan's origination date. Fixed rate loans are classified according to their original amortization terms: FRM30 = Fixed Rate with amortization term > 309 months and <= 429 months. FRM20 = Fixed Rate with amortization term > 189 months and <= 309 months. FRM15 = Fixed Rate with amortization term <= 189 months.	FRM 30, FRM 20, FRM 15, ARM 1/1	Set to ARM 1/1

Variable	Definition / Logic	Acceptable Values	Treatment of Missing or Unacceptable Values
	The ARM 1/1 is an adjustable-rate mortgage (ARM) where the rate and the payment adjust annually. Product types other than FRM30, FRM20, FRM15 or ARM 1/1 should be assigned to FRM30. Use the post-modification product type for modified loans.		
Property Type	The physical structure of the property.	Single-family 1-Unit, Single-family 2-4 Units, Condominium, Manufactured Home	Set to Single-family 2-4 Units
Refreshed Credit Score	The borrower's credit score as of the reporting date. If there are credit scores from multiple credit repositories for a borrower, use the following logic to determine a single Refreshed Credit Score: • If there are credit scores from two repositories, take the lower credit score. • If there are credit scores from three repositories, use the middle credit score. • If there are credit scores from three repositories and two of the credit scores are identical, use the identical credit score. If there are multiple borrowers, use the following logic to determine a single Refreshed Credit Score:	300 <= Refreshed Credit Score <= 850	If a refreshed credit score is not available, use the most recent score. If no credit score is available set the credit score to 600.

Variable	Definition / Logic	Acceptable Values	Treatment of Missing or Unacceptable Values
	• Using the logic above, determine a single credit score for each borrower. • Select the lowest single credit score across all borrowers.		
Subordination (Second lien Original LTV)	The ratio of the original loan amount of the second lien to the lesser of appraised value or sale price.	0% <= Subordination <= 80%	Set to 80% if greater than 80%
Unpaid Principal Balance (UPB)	The remaining unpaid principal balance on the loan as of the reporting date.	$0 < UPB < $2,000,000	Set to $45,000

(e) Table 2 lists the data needed to determine the *CPHaircut* used in the calculation of the single-family whole loans and guarantees credit risk capital requirement. The table contains variable names, definitions, acceptable values, and treatments for missing or unacceptable values.

Table 2: Data Inputs for *CPHaircut* Calculation

Variable	Definition / Logic	Acceptable Values	Treatment of Missing or Unacceptable Values
Counterparty Name	The name of the counterparty.		
Counterparty Rating	Counterparty rating as defined in Table 3. An Enterprise should assign the counterparty rating that most closely aligns to the assessment of the counterparty from the Enterprise's internal counterparty risk framework.	1 2 3 4 5 6 7 8	Set to 8

Mortgage Concentration Risk	An Enterprise's assessment of a counterparty's exposure to mortgage credit risk relative to the counterparty's exposure to other lines of business. This assessment may include both quantitative and qualitative factors.	High, Not High	Set to High

(f) An Enterprise must have internally generated ratings for counterparties. The internally generated ratings must be converted into the counterparty ratings provided in Table 3. Table 3 provides the counterparty financial strength ratings and descriptions used in this part to determine *CPHaircuts.*

Table 3: Counterparty Financial Strength Ratings

Counterparty Rating	**Description**
1	The counterparty is exceptionally strong financially. The counterparty is expected to meet its obligations under foreseeable adverse events.
2	The counterparty is very strong financially. There is negligible risk the counterparty may not be able to meet all of its obligations under foreseeable adverse events.
3	The counterparty is strong financially. There is a slight risk the counterparty may not be able to meet all of its obligations under foreseeable adverse events.
4	The counterparty is financially adequate. Foreseeable adverse events will have a greater impact on '4' rated counterparties than higher rated counterparties.
5	The counterparty is financially questionable. The counterparty may not meet its obligations under foreseeable adverse events.
6	The counterparty is financially weak. The counterparty is not expected to meet its obligations under foreseeable adverse events.
7	The counterparty is financially extremely weak. The counterparty's ability to meet its obligations is questionable.
8	The counterparty is in default on an obligation or is under regulatory supervision.

(g) Table 4 provides the data inputs supplied by FHFA needed for the calculation of the single-family whole loans and guarantees credit risk capital requirement.

Table 4: Data Inputs Provided by FHFA

Item	Description
Cohort Burnout	A table containing historical origination dates and the number of opportunities, measured in months, a loan originated on a given origination date has had to refinance to a lower interest rate. For a given origination month/year cohort, an opportunity to refinance occurs when the Primary Mortgage Market Survey (PMMS) rate for the cohort exceeds the prevailing PMMS rate by more than 50 basis points. Cohort Burnout is designated as "No Burnout" if the cohort has not experienced a refinance opportunity. Cohort Burnout is "Low" if the cumulative occurrence of refinance opportunities is between 1 month and 12 months. Cohort Burnout is "Medium" if the cumulative occurrence of refinance opportunities is between 13 months and 24 months. Cohort Burnout is "High" if the cumulative occurrence of refinance opportunities exceeds 24 months.
House Price Index (HPI)	FHFA's seasonally adjusted purchase-only HPI by state.

§ 1240.7 Loan segments for single-family whole loans and guarantees credit risk capital requirement.

(a) An Enterprise must assign each single-family whole loan and guarantee with exposure to credit risk to a single-family loan segment. The single-family loan segments are: New Origination Loan; Performing Seasoned Loan; Non-Modified Re-Performing Loan (RPL); Modified RPL; Non-Performing Loan (NPL).

(b) The definitions for the single-family loan segments are provided in Table 5.

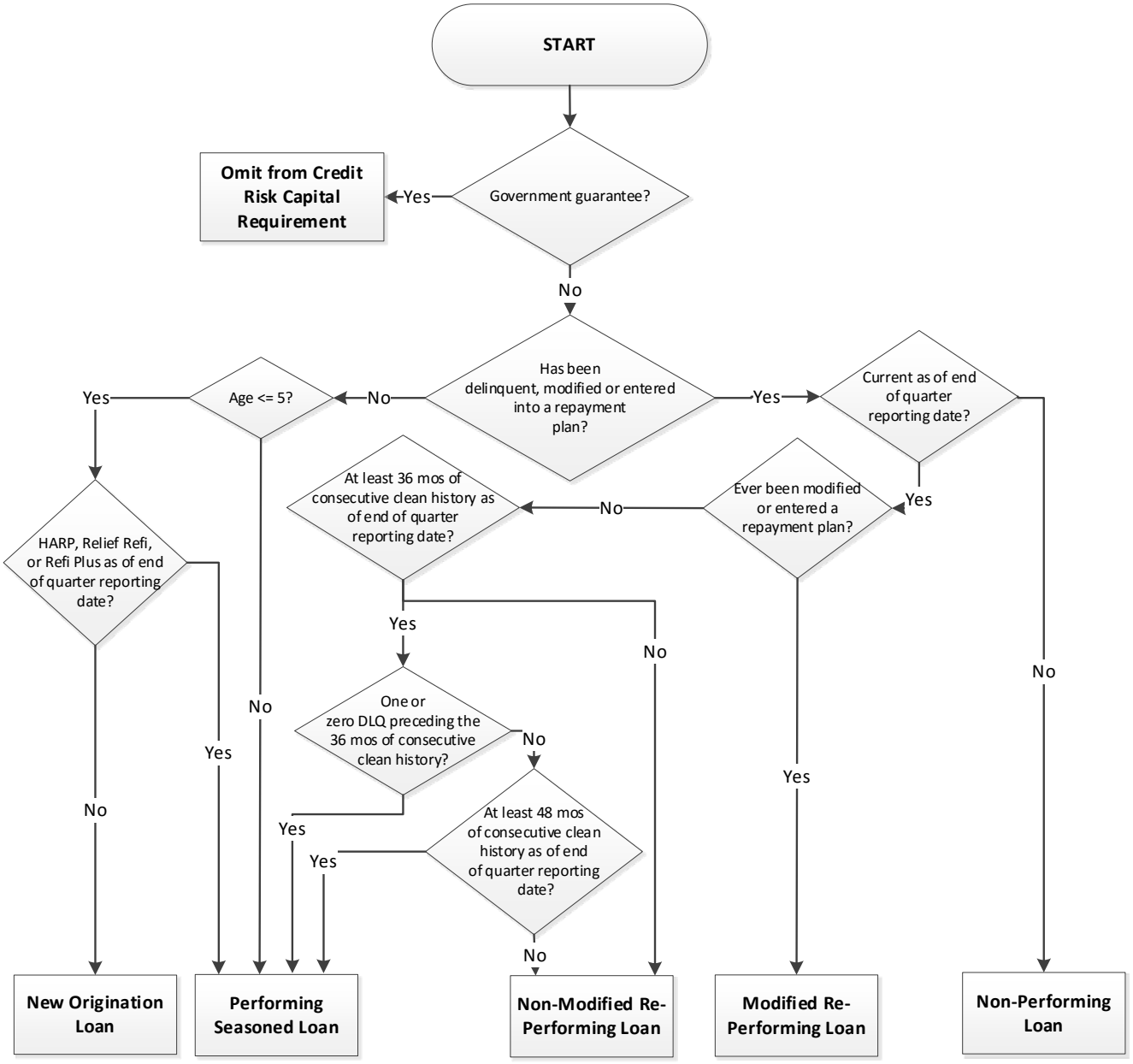
Table 5: Definitions for Single-family Loan Segments

Segment	Definition
New Origination Loan	• Loan age less than or equal to 5 months, and • Never delinquent. Excludes: • Streamlined Refi loans.
Performing Seasoned Loan	• Loan age greater than 5 months, and • Never delinquent.

	Also includes: • Newly funded Streamlined Refi loans. • Loans that were delinquent, were not modified or put on a repayment plan, and have made 48 consecutive payments as of the reporting date. • Loans that were delinquent, were not modified or put on a repayment plan, and have made 36 consecutive payments as of the reporting date and had no more than one missed payment in the 12 months preceding the 36 months.
Non-Modified RPL	• Performing, • Had a prior delinquency, and • Never modified or entered a repayment plan. Excludes: • Loans that have made 48 consecutive payments as of the reporting date. • Loans that have made 36 consecutive payments as of the reporting date and had no more than one missed payment in the 12 months preceding the 36 months.
Modified RPL	• Performing and • Modified or entered into a repayment plan.
NPL	• Delinquent.

(c) The process for assigning a loan to the appropriate single-family loan segment is presented in the decision tree shown in Figure 1.

Figure 1: Single-family Loans Segments Decision Tree



§ 1240.8 Base credit risk capital requirement for single-family whole loans and guarantees.

An Enterprise must determine the base credit risk capital requirement in basis points ($BaseCapital_{bps}$) for a loan by using the Table that corresponds to a particular loan segment.

(a) Single-family New Origination Loan $BaseCapital_{bps}$ is shown in Table 6. For each loan classified as a New Origination Loan, $BaseCapital_{bps}$ is the value in the cell in Table 6 determined using the original credit score and OLTV of the loan.

Table 6: Single-family New Origination Loan $BaseCapital_{bps}$

	OLTV <= 30%	30% < OLTV <= 60%	60% < OLTV <= 70%	70% < OLTV <= 75%	75% < OLTV < 80%	OLTV = 80%	80% < OLTV <= 85%	85% < OLTV <= 90%	90% < OLTV <= 95%	95% < OLTV <= 97%	OLTV > 97%
Original Credit Score < 620	10	108	293	437	571	652	779	958	1134	1219	1357
620 <= Original Credit Score < 640	10	84	234	350	459	518	617	764	913	969	1108
640 <= Original Credit Score < 660	10	73	203	305	400	451	537	667	802	864	974
660 <= Original Credit Score < 680	10	63	177	264	346	390	468	589	719	779	865
680 <= Original Credit Score < 700	10	53	154	230	300	339	405	528	656	716	802
700 <= Original Credit Score < 720	10	46	134	199	259	293	344	452	566	620	700
720 <= Original Credit Score < 740	10	39	115	171	222	251	300	400	507	557	633
740 <= Original Credit Score < 760	10	31	95	141	183	206	244	326	417	459	525
760 <= Original Credit Score < 780	10	25	77	114	148	166	195	262	339	374	431
Original Credit Score >= 780	10	19	59	87	113	127	148	200	258	286	331

(b) Single-family Performing Seasoned Loan $BaseCapital_{bps}$ is shown in Table 7. For each loan classified as a Performing Seasoned Loan, $BaseCapital_{bps}$ is the value in the cell in Table 7 determined using the refreshed credit score and MTMLTV of the loan.

Table 7: Single-family Performing Seasoned Loan $BaseCapital_{bps}$

	MTMLTV <= 30%	30% < MTMLTV <= 60%	60% < MTMLTV <= 70%	70% < MTMLTV <= 75%	75% < MTMLTV <= 80%	80% < MTMLTV <= 85%	85% < MTMLTV <= 90%	90% < MTMLTV <= 95%	95% < MTMLTV <= 100%	100% < MTMLTV <= 110%	110% < MTMLTV <= 120%	MTMLTV > 120%
Refreshed Credit Score < 620	10	108	293	437	636	779	958	1134	1312	1491	1656	1911
620 <= Refreshed Credit Score < 640	10	84	234	350	506	617	764	913	1075	1252	1426	1700
640 <= Refreshed Credit Score < 660	10	73	203	305	441	537	667	802	959	1124	1291	1555
660 <= Refreshed Credit Score < 680	10	63	177	264	381	468	589	719	852	1010	1172	1425
680 <= Refreshed Credit Score < 700	10	53	154	230	331	405	528	656	754	905	1059	1295
700 <= Refreshed Credit Score < 720	10	46	134	199	286	344	452	566	663	806	950	1168
720 <= Refreshed Credit Score < 740	10	39	115	171	245	300	400	507	578	710	842	1037
740 <= Refreshed Credit Score < 760	10	31	95	141	201	244	326	417	483	599	715	884
760 <= Refreshed Credit Score < 780	10	25	77	114	162	195	262	339	393	493	594	737
Refreshed Credit Score >= 780	10	19	59	87	124	148	200	258	301	382	463	578

(c) Single-family Non-Modified RPL $BaseCapital_{bps}$ is shown in Table 8. For each loan classified as a Non-Modified RPL, $BaseCapital_{bps}$ is the value in the cell in Table 8 determined using the Months Since Last Delinquency and the MTMLTV of the loan.

Table 8: Single-family Non-Modified RPL $BaseCapital_{bps}$

		MTMLTV <= 30%	30% < MTMLTV <= 60%	60% < MTMLTV <= 70%	70% < MTMLTV <= 75%	75% < MTMLTV <= 80%	80% < MTMLTV <= 85%	85% < MTMLTV <= 90%	90% < MTMLTV <= 95%	95% < MTMLTV <= 100%	100% < MTMLTV <= 110%	110% < MTMLTV <= 120%	MTMLTV > 120%
Months Since Last Delinquency	0 < Months <= 3	8	122	315	433	525	658	763	843	929	1002	1085	1125
	3 < Months <= 12	7	88	245	340	421	522	623	708	791	882	1002	1106
	12 < Months <= 36	6	67	202	285	353	431	523	607	693	795	938	1093
	36 < Months <= 48	8	46	132	198	285	349	447	550	642	766	893	1088

(d) Single-family Modified RPL $BaseCapital_{bps}$ is shown in Table 9. For each loan classified as a Modified RPL, $BaseCapital_{bps}$ is the value in the cell in Table 9 determined using the minimum of the Months Since Last Modification and Months Since Last Delinquency and the MTMLTV of the loan.

Table 9: Single-Family Modified RPL $BaseCapital_{bps}$

		MTMLTV <= 30%	30% < MTMLTV <= 60%	60% < MTMLTV <= 70%	70% < MTMLTV <= 75%	75% < MTMLTV <= 80%	80% < MTMLTV <= 85%	85% < MTMLTV <= 90%	90% < MTMLTV <= 95%	95% < MTMLTV <= 100%	100% < MTMLTV <= 110%	110% < MTMLTV <= 120%	MTMLTV > 120%
Minimum of (1) Months Since Last Modification and (2) Months Since Last Delinquency	0 < Months <= 3	14	195	474	613	715	806	904	993	1061	1120	1177	1222
	3 < Months <= 12	13	153	388	506	593	678	776	868	946	1024	1112	1217
	12 < Months <= 36	12	119	314	415	493	576	671	767	849	949	1056	1212
	36 < Months <= 48	11	84	220	313	425	500	611	733	830	939	1046	1207

(e) Single-family NPL $BaseCapital_{bps}$ is shown in Table 10. For each loan classified as an NPL, $BaseCapital_{bps}$ is the value in the cell in Table 10 determined using the Number of Missed Payments and the MTMLTV of the loan.

Table 10: Single-Family NPL $BaseCapital_{bps}$

		MTMLTV <= 30%	30% < MTMLTV <= 60%	60% < MTMLTV <= 70%	70% < MTMLTV <= 75%	75% < MTMLTV <= 80%	80% < MTMLTV <= 85%	85% < MTMLTV <= 90%	MTMLTV > 90%
Number of Missed Payments	1	46	387	1054	1195	1300	1404	1496	1663
	2	60	507	1233	1374	1462	1535	1612	1695
	3-6	80	603	1315	1437	1503	1556	1600	1638
	>=7	198	884	1565	1619	1650	1659	1667	1577

§ 1240.9 Risk multipliers for single-family whole loans and guarantees.

(a) Risk multiplier values increase or decrease the credit risk capital requirement for single-family whole loans and guarantees based on a loan's assigned loan segment and risk characteristics. The Single-family Risk Multipliers are presented in Table 11.

(b) The steps for calculating the total combined risk multiplier (*TotalCombRiskMult*) are as follows:

(1) Determine the appropriate risk multipliers values from Table 11 based on the loan's characteristics and assigned loan segment.

(2) Apply the appropriate formula as set forth in paragraph (c) of this section to calculate the uncapped total combined risk multiplier (*UncapTotalCombRiskMult*).

(3) For high LTV loans, the combined risk multiplier is subject to a cap. For those loans, apply the calculation set forth in paragraph (d) of this section, to determine *TotalCombRiskMult*.

(4) For loans not subject to the cap, *TotalCombRiskMult* will equal *UncapTotalCombRiskMult*.

Table 11: Single-family Risk Multipliers

Risk Factor	Value or Range	Risk Multipliers by Single-family Loan Segment				
		New Origination Loan	Performing Seasoned Loan	Non-Modified RPL	Modified RPL	NPL
Loan Purpose	Purchase	1.0	1.0	1.0	1.0	
	Cashout Refinance	1.4	1.4	1.4	1.4	
	Rate/Term Refinance	1.3	1.3	1.2	1.3	
	Other	1.0	1.0	1.0	1.0	
Occupancy Type	Owner Occupied or Second Home	1.0	1.0	1.0	1.0	1.0
	Investment	1.2	1.2	1.5	1.3	1.2
Property Type	1-Unit	1.0	1.0	1.0	1.0	1.0
	2-4 Unit	1.4	1.4	1.4	1.3	1.1
	Condominium	1.1	1.1	1.0	1.0	1.0

Risk Factor	Value or Range	Risk Multipliers by Single-family Loan Segment				
		New Origination Loan	Performing Seasoned Loan	Non-Modified RPL	Modified RPL	NPL
	Manufactured Home	1.3	1.3	1.8	1.6	1.2
Number of Borrowers	Multiple borrowers	1.0	1.0	1.0	1.0	1.0
	One borrower	1.5	1.5	1.4	1.4	1.1
Third-Party Origination Channel	Non-TPO	1.0	1.0	1.0	1.0	1.0
	TPO	1.1	1.1	1.1	1.1	1.0
DTI	DTI <= 25%	0.8	0.8	0.9	0.9	
	25% < DTI <= 40%	1.0	1.0	1.0	1.0	
	DTI > 40%	1.2	1.2	1.2	1.1	
Product Type	FRM 30 year	1.0	1.0	1.0	1.0	1.0
	ARM 1/1	1.7	1.7	1.1	1.0	1.1
	FRM 15 year	0.3	0.3	0.3	0.5	0.5
	FRM 20 year	0.6	0.6	0.6	0.5	0.8
Loan Size	UPB <= $50,000	2.0	2.0	1.5	1.5	1.9
	$50,000 < UPB <= $100,000	1.4	1.4	1.5	1.5	1.4
	UPB > $100,000	1.0	1.0	1.0	1.0	1.0
Subordination (OTLV x Second Lien)	No subordination	1.0	1.0	1.0	1.0	
	30% < OLTV <= 60% and 0% < subordination <= 5%	1.1	1.1	0.8	1.0	
	30% < OLTV<= 60% and subordination > 5%	1.5	1.5	1.1	1.2	
	OLTV > 60% and 0% < subordination <= 5%	1.1	1.1	1.2	1.1	
	OLTV > 60% and subordination > 5%	1.4	1.4	1.5	1.3	
Loan Age	Loan Age <= 24 months		1.0			
	24 months < Loan Age <= 36 months		0.95			
	36 months < Loan Age <= 60 months		0.80			
	Loan Age > 60 months		0.75			
Cohort Burnout	No Burnout		1.0			
	Low		1.2			
	Medium		1.3			
	High		1.4			
Interest-Only (IO)	No IO		1.0	1.0	1.0	
	Yes IO		1.6	1.4	1.1	
Loan Documentation Level	Full Documentation		1.0	1.0	1.0	
	No Documentation or Low Documentation		1.3	1.3	1.2	
Streamlined Refi	No		1.0	1.0	1.0	
	Yes		1.0	1.2	1.1	

Risk Factor	Value or Range	Risk Multipliers by Single-family Loan Segment				
		New Origination Loan	Performing Seasoned Loan	Non-Modified RPL	Modified RPL	NPL
Refreshed Credit Score for RPLs	Refreshed Credit Score < 620			1.6	1.4	
	620 <= Refreshed Credit Score < 640			1.3	1.2	
	640 <= Refreshed Credit Score < 660			1.2	1.1	
	660 <= Refreshed Credit Score < 700			1.0	1.0	
	700 <= Refreshed Credit Score < 720			0.7	0.8	
	720 <= Refreshed Credit Score < 740			0.6	0.7	
	740 <= Refreshed Credit Score < 760			0.5	0.6	
	760 <= Refreshed Credit Score < 780			0.4	0.5	
	Refreshed Credit Score >= 780			0.3	0.4	
Payment change from modification	Payment Change >= 0%				1.1	
	-20% <= Payment Change < 0%				1.0	
	-30% <= Payment Change < -20%				0.9	
	Payment Change < -30%				0.8	
Previous Maximum Delinquency (in the last 36 months)	0-1 Months			1.0	1.0	
	2-3 Months			1.2	1.1	
	4-5 Months			1.3	1.1	
	6+ Months			1.5	1.1	
Refreshed Credit Score for NPLs	Refreshed Credit Score < 580					1.2
	580 <= Refreshed Credit Score < 640					1.1
	640 <= Refreshed Credit Score < 700					1.0
	700 <= Refreshed Credit Score < 720					0.9
	720 <= Refreshed Credit Score < 760					0.8
	760 <= Refreshed Credit Score < 780					0.7
	Refreshed Credit Score >= 780					0.5

(c) The following loan characteristics risk multiplier calculations are to be used for each respective loan segment to determine the *UncapTotalCombRiskMult*:

(1) For each loan classified as a Single-family New Origination Loan determine the risk multiplier values associated with the relevant risk factors from Table 11 and apply the following formula to calculate *UncapTotalCombRiskMult*:

UncapTotalCombRiskMult = Loan Purpose Multiplier x

Occupancy Type Multiplier x Property Type Multiplier x

Number of Borrowers Multiplier x Third-Party Origination Channel Multiplier x Back-End Debt-to-Income Multiplier x Product Type Multiplier x Loan Size Multiplier x Subordination Multiplier.

(2) For each loan classified as a Seasoned Performing Loan determine the risk multiplier values associated with the relevant risk factors from Table 11 and apply the following formula to calculate *UncapTotalCombRiskMult*:

UncapTotalCombRiskMult = Loan Purpose Multiplier x Occupancy Type Multiplier x Property Type Multiplier x Number of Borrowers Multiplier x Third-Party Origination Channel Multiplier x Back-End Debt-to-Income Multiplier x Product Type Multiplier x Loan Size Multiplier x Subordination Multiplier x Loan Age Multiplier x Cohort Burnout Multiplier x Interest-Only Multiplier x Loan Documentation Level Multiplier x Streamlined Refi Multiplier.

(3) For each loan classified as a Non-Modified RPL determine the risk multiplier values associated with the relevant risk factors from Table 11 and apply the following formula to calculate *UncapTotalCombRiskMult*:

UncapTotalCombRiskMult = Loan Purpose Multiplier x Occupancy Type Multiplier x Property Type Multiplier x Number of Borrowers Multiplier x Third-Party Origination Channel Multiplier x Back-End Debt-to-Income Multiplier x Product Type Multiplier x Loan Size Multiplier x

Subordination Multiplier x Loan Age Multiplier x Interest-Only Multiplier x Loan Documentation Level Multiplier x Streamlined Refi Multiplier x Refreshed Credit Score for RPLs Multiplier x Previous Maximum Delinquency Multiplier.

(4) For each loan classified as a Modified RPL determine the risk multiplier values associated with the relevant risk factors from Table 11 and apply the following formula to calculate *UncapTotalCombRiskMult*:

UncapTotalCombRiskMult = Loan Purpose Multiplier x Occupancy Type Multiplier x Property Type Multiplier x Number of Borrowers Multiplier x Third-Party Origination Channel Multiplier x Back-End Debt-to-Income Multiplier x Product Type Multiplier x Loan Size Multiplier x Subordination Multiplier x Loan Age Multiplier x Interest-Only Multiplier x Loan Documentation Level Multiplier x Streamlined Refi Multiplier x Refreshed Credit Score for RPLs Multiplier x Payment change from modification Multiplier x Previous Maximum Delinquency Multiplier.

(5) For each loan classified as an NPL determine the risk multiplier values associated with the relevant risk factors from Table 11 and apply the following formula to calculate *UncapTotalCombRiskMult*:

UncapTotalCombRiskMult = Occupancy Type Multiplier x Property Type Multiplier x Number of Borrowers Multiplier x Product Type Multiplier x Loan Size Multiplier x Prior

Maximum Delinquency Multiplier x Refreshed Credit Score for NPLs Multiplier.

(d) *TotalCombRiskMult* is calculated as described below:

(1) For high LTV loans, the combined risk multiplier is subject to a cap. If the OLTV for a loan classified as a New Origination Loan or the MTMLTV for a loan classified in any other loan segment is greater than 95%, *TotalCombRiskMult* is capped at 3.0 according to the following formula:

TotalCombRiskMult = MIN(*UncapTotalCombRiskMult*, 3.0)

(2) If the OLTV for a loan classified as a New Origination Loan or the MTMLTV for a loan classified in any other loan segment is less than or equal to 95%, then *TotalCombRiskMult* equals *UncapTotalCombRiskMult*.

§ 1240.10 Gross credit risk capital requirement for single-family whole loans and guarantees.

An Enterprise must determine the gross credit risk capital requirement in basis points ($GrossCreditRiskCapReq_{bps}$) for a loan by taking the product of $BaseCapital_{bps}$ and *TotalCombRiskMult*, where the product is subject to a limit of 3,000 basis points according to the following formula:

$GrossCreditRiskCapReq_{bps}$ = MIN($BaseCapital_{bps}$ x *TotalCombRiskMult*, 3,000)

§ 1240.11 Loan-level credit enhancement impact on gross credit risk capital requirement.

(a) Loan-level credit enhancement comprises participation agreements, repurchase or replacement agreements, recourse and indemnification agreements and mortgage insurance.

(b) Loan-level credit enhancement reduces an Enterprise's gross credit risk capital requirement. Only loans covered by a loan-level credit enhancement as of the reporting date receives a loan-level credit enhancement benefit.

(c) An Enterprise must determine the credit enhancement multiplier (*CEMultiplier*) using Tables 12, 13, 14, 15, and 16, and the special provisions in paragraphs (d) through (i) of this section.

(1) Table 12 shows *CEMultipliers* for New Origination Loan, Performing Seasoned Loan, and Non-Modified RPL loan segments where MI Cancellation Feature is set to Non-Cancellable.

Table 12: *CEMultipliers* for New Origination Loan, Performing Seasoned Loan, and Non-Modified RPL Loan Segments when MI Cancellation Feature is set to Non-Cancellable

Amortization Term/Coverage Type	**Coverage Category**	***CEMultiplier***
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.846
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.701
	90% < OLTV <= 95% and MI Coverage Percent = 25%	0.408
	95% < OLTV <= 97% and MI Coverage Percent = 35%	0.226
	OLTV > 97% and MI Coverage Percent = 35%	0.184
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 12%	0.706
	85% < OLTV <= 90% and MI Coverage Percent = 25%	0.407
	90% < OLTV <= 95% and MI Coverage Percent = 30%	0.312
	95% < OLTV <= 97% and MI Coverage Percent = 35%	0.230
	OLTV > 97% and MI Coverage Percent = 35%	0.188
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.846
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.701
	90% < OLTV <= 95% and MI Coverage Percent = 16%	0.612
	95% < OLTV <= 97% and MI Coverage Percent = 18%	0.570
	OLTV > 97% and MI Coverage Percent = 20%	0.535
30 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.850
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.713
	90% < OLTV <= 95% and MI Coverage Percent = 16%	0.627

Amortization Term/Coverage Type	**Coverage Category**	***CEMultiplier***
	95% < OLTV <= 97% and MI Coverage Percent = 18%	0.590
	OLTV > 97% and MI Coverage Percent = 20%	0.558

(2) Table 13 shows *CEMultipliers* for New Origination Loan, Performing Seasoned Loan, and Non-Modified RPL loan segments where MI Cancellation Feature is set to Cancellable.

Table 13: *CEMultipliers* for New Origination Loan, Performing Seasoned Loan, and Non-Modified RPL Loan Segments when MI Cancellation Feature is set to Cancellable

		Loan Age (months)											
		Loan Age <= 5	5 < Loan Age <= 12	12 < Loan Age <= 24	24 < Loan Age <= 36	36 < Loan Age <= 48	48 < Loan Age <= 60	60 < Loan Age <= 72	72 < Loan Age <= 84	84 < Loan Age <= 96	96 < Loan Age <=108	108 < Loan Age <=120	Loan Age >120
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.988	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 25%	0.826	0.853	0.912	0.973	0.996	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.732	0.765	0.848	0.936	0.986	0.998	1.000	1.000	1.000	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 35%	0.630	0.673	0.762	0.865	0.945	0.980	0.996	1.000	1.000	1.000	1.000	1.000
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 12%	0.867	0.884	0.928	0.962	0.994	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 25%	0.551	0.584	0.627	0.679	0.785	0.893	0.950	0.986	0.998	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 30%	0.412	0.440	0.456	0.484	0.547	0.654	0.743	0.845	0.932	0.969	0.992	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.322	0.351	0.369	0.391	0.449	0.535	0.631	0.746	0.873	0.925	0.965	1.000
	OLTV > 97% and MI Coverage = 35%	0.272	0.295	0.314	0.353	0.410	0.462	0.515	0.607	0.756	0.826	0.887	1.000
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.988	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.887	0.904	0.943	0.983	0.997	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.854	0.874	0.918	0.966	0.992	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	OLTV > 97% and MI	0.788	0.810	0.859	0.922	0.969	0.989	0.998	1.000	1.000	1.000	1.000	1.000

		Loan Age (months)											
		Loan Age <= 5	5 < Loan Age <= 12	12 < Loan Age <= 24	24 < Loan Age <= 36	36 < Loan Age <= 48	48 < Loan Age <= 60	60 < Loan Age <= 72	72 < Loan Age <= 84	84 < Loan Age <= 96	96 < Loan Age <=108	108 < Loan Age <=120	Loan Age >120
	Coverage = 20%												
30 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.934	0.943	0.964	0.981	0.997	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.780	0.795	0.819	0.845	0.896	0.948	0.976	0.993	0.999	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.679	0.690	0.703	0.719	0.755	0.813	0.861	0.916	0.963	0.983	0.995	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.642	0.652	0.662	0.676	0.708	0.756	0.806	0.866	0.933	0.960	0.981	1.000
	OLTV > 97% and MI Coverage = 20%	0.597	0.607	0.617	0.629	0.658	0.686	0.715	0.765	0.845	0.882	0.914	1.000

(3) Table 14 shows *CEMultipliers* for the Modified RPL loan segment with 30-Year Post-Modification Amortization when MI Cancellation Feature is set to Cancellable. The 30 Year and 15/20 Year Amortizing Loan characteristics refer to pre-modification original amortization terms.

Table 14: *CEMultipliers* for the Modified RPL loan segment with 30-Year Post-Modification Amortization when MI Cancellation Feature is set to Cancellable

		Months (Mths) Since Last Modification											
		Mths <= 5	5 < Mths <= 12	12 < Mths <= 24	24 < Mths <= 36	36 < Mths <= 48	48 < Mths <= 60	60 < Mths <= 72	72 < Mths <= 84	84 < Mths <= 96	96 < Mths <=108	108 < Mths <= 120	Mths >120
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.988	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 25%	0.826	0.853	0.912	0.973	0.996	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.732	0.765	0.848	0.936	0.986	0.998	1.000	1.000	1.000	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 35%	0.630	0.673	0.762	0.865	0.945	0.980	0.996	1.000	1.000	1.000	1.000	1.000
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 12%	0.867	0.906	0.978	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 25%	0.551	0.568	0.653	0.839	0.968	0.992	0.998	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 30%	0.412	0.426	0.470	0.601	0.794	0.889	0.951	0.981	0.992	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.322	0.337	0.380	0.492	0.689	0.810	0.899	0.945	0.965	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 35%	0.272	0.284	0.334	0.436	0.561	0.682	0.791	0.857	0.887	1.000	1.000	1.000
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.988	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.887	0.904	0.943	0.983	0.997	1.000	1.000	1.000	1.000	1.000	1.000	1.000

		Months (Mths) Since Last Modification											
		Mths <= 5	5 < Mths <= 12	12 < Mths <= 24	24 < Mths <= 36	36 < Mths <= 48	48 < Mths <= 60	60 < Mths <= 72	72 < Mths <= 84	84 < Mths <= 96	96 < Mths <=108	108 < Mths <= 120	Mths >120
	95% < OLTV <= 97% and MI Coverage = 18%	0.854	0.874	0.918	0.966	0.992	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 20%	0.788	0.810	0.859	0.922	0.969	0.989	0.998	1.000	1.000	1.000	1.000	1.000
30 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.934	0.954	0.989	0.999	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.780	0.788	0.832	0.922	0.985	0.996	0.999	1.000	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.679	0.685	0.711	0.784	0.889	0.940	0.973	0.989	0.995	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.642	0.647	0.669	0.732	0.836	0.900	0.947	0.971	0.981	1.000	1.000	1.000
	OLTV > 97% and MI Coverage = 20%	0.597	0.602	0.623	0.672	0.740	0.805	0.864	0.898	0.914	1.000	1.000	1.000

(4) Table 15 shows *CEMultipliers* for Modified RPL with 40-Year Post-Modification Amortization when MI Cancellation Feature is set to Cancellable. The 30 Year and 15/20 Year Amortizing Loan characteristics refer to pre-modification original amortization terms.

Table 15: *CEMultipliers* for Modified RPL with 40-Year Post-Modification Amortization when MI Cancellation Feature is set to Cancellable

		Months (Mths) Since Last Modification											
		Mths <= 5	5 < Mths <= 12	12 < Mths <= 24	24 < Mths <= 36	36 < Mths <= 48	48 < Mths <= 60	60 < Mths <= 72	72 < Mths <= 84	84 < Mths <= 96	96 < Mths <=108	108 < Mths <=120	Mths >120
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	0.999	0.999	0.999	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.971	0.971	0.980	0.988	0.994	0.999	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 25%	0.826	0.853	0.853	0.853	0.883	0.912	0.943	0.973	0.996	1.000	1.000	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.732	0.765	0.765	0.765	0.807	0.848	0.892	0.936	0.986	0.998	1.000	1.000
	OLTV > 97% and MI Coverage = 35%	0.630	0.673	0.673	0.673	0.718	0.762	0.814	0.865	0.945	0.980	0.996	1.000
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage = 12%	0.867	0.884	0.928	0.962	0.994	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 25%	0.551	0.584	0.627	0.679	0.785	0.893	0.950	0.986	0.998	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 30%	0.412	0.440	0.456	0.484	0.547	0.654	0.743	0.845	0.932	0.969	0.992	1.000
	95% < OLTV <= 97% and MI Coverage = 35%	0.322	0.351	0.369	0.391	0.449	0.535	0.631	0.746	0.873	0.925	0.965	1.000
	OLTV > 97% and MI Coverage = 35%	0.272	0.295	0.314	0.353	0.410	0.462	0.515	0.607	0.756	0.826	0.887	1.000
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.997	0.998	0.998	0.999	0.998	0.998	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.963	0.971	0.971	0.971	0.980	0.988	0.994	0.999	1.000	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.887	0.904	0.904	0.904	0.924	0.943	0.963	0.983	0.997	1.000	1.000	1.000

		Months (Mths) Since Last Modification											
		Mths <= 5	5 < Mths <= 12	12 < Mths <= 24	24 < Mths <= 36	36 < Mths <= 48	48 < Mths <= 60	60 < Mths <= 72	72 < Mths <= 84	84 < Mths <= 96	96 < Mths <=108	108 < Mths <=120	Mths >120
	95% < OLTV <= 97% and MI Coverage = 18%	0.854	0.874	0.874	0.874	0.896	0.918	0.942	0.966	0.992	0.999	1.000	1.000
	OLTV > 97% and MI Coverage = 20%	0.788	0.810	0.810	0.810	0.835	0.859	0.891	0.922	0.969	0.989	0.998	1.000
30 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage = 6%	0.934	0.943	0.964	0.981	0.997	0.999	1.000	1.000	1.000	1.000	1.000	1.000
	85% < OLTV <= 90% and MI Coverage = 12%	0.780	0.795	0.819	0.845	0.896	0.948	0.976	0.993	0.999	1.000	1.000	1.000
	90% < OLTV <= 95% and MI Coverage = 16%	0.679	0.690	0.703	0.719	0.755	0.813	0.861	0.916	0.963	0.983	0.995	1.000
	95% < OLTV <= 97% and MI Coverage = 18%	0.642	0.652	0.662	0.676	0.708	0.756	0.806	0.866	0.933	0.960	0.981	1.000
	OLTV > 97% and MI Coverage = 20%	0.597	0.607	0.617	0.629	0.658	0.686	0.715	0.765	0.845	0.882	0.914	1.000

(5) Table 16 shows *CEMultipliers* for NPLs.

Table 16: *CEMultipliers* for NPLs

Original Amortization Term/Coverage Type	**Coverage Category**	***CEMultiplier***
15/20 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.893
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.803
	90% < OLTV <= 95% and MI Coverage Percent = 25%	0.597
	95% < OLTV <= 97% and MI Coverage Percent = 35%	0.478
	OLTV > 97% and MI Coverage Percent = 35%	0.461
30 Year Amortizing Loan with Guide-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 12%	0.813
	85% < OLTV <= 90% and MI Coverage Percent = 25%	0.618
	90% < OLTV <= 95% and MI Coverage Percent = 30%	0.530
	95% < OLTV <= 97% and MI Coverage Percent = 35%	0.490
	OLTV > 97% and MI Coverage Percent = 35%	0.505
15/20 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.893
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.803
	90% < OLTV <= 95% and MI Coverage Percent = 16%	0.775
	95% < OLTV <= 97% and MI Coverage Percent = 18%	0.678
	OLTV > 97% and MI Coverage Percent = 20%	0.663
30 Year Amortizing Loan with Charter-level Coverage	80% < OLTV <= 85% and MI Coverage Percent = 6%	0.902
	85% < OLTV <= 90% and MI Coverage Percent = 12%	0.835
	90% < OLTV <= 95% and MI Coverage Percent = 16%	0.787
	95% < OLTV <= 97% and MI Coverage Percent = 18%	0.765
	OLTV > 97% and MI Coverage Percent = 20%	0.760

(d) *CEMultipliers* calculated from Tables 12, 13, 14, 15 and 16 may be subject to special provisions depending on the characteristics of the single-family whole loan and guarantee.

(1) If a loan is covered by MI and its OLTV is less than or equal to 80 percent, use the *CEMultiplier* associated with the appropriate 80 to 85 percent OLTV cell.

(2) If a loan has an interest-only feature and its MI Cancellation Feature is set to Cancellable, treat the MI as non-cancellable when selecting the appropriate *CEMultiplier*.

(3) If a loan has an MI Coverage Percent between the MI Coverage Percentages for Charter-level Coverage and Guide-level Coverage, use linear interpolation to determine the *CEMultiplier*.

(4) If a loan has an MI Coverage Percent that is less than the MI Coverage Percent for Charter-Level Coverage, use linear interpolation between a hypothetical policy with zero coverage and a *CEMultiplier* of one, and the Charter-level Coverage to determine the *CEMultiplier*.

(5) If a loan has an MI Coverage Percent that is greater than the Guide-level Coverage, set the *CEMultiplier* equal to the *CEMultiplier* for the Guide-level Coverage.

(e) *CEMultiplier* for full repurchase or replacement agreements is set to 0.0.

(f) *CEMultiplier* for full recourse and indemnification agreements is set to 0.0.

(g) *CEMultiplier* for partial repurchase or replacement agreements shall be calculated using the methodology for calculating capital relief as provided in § 1240.14 of this part.

(h) *CEMultiplier* for partial recourse and indemnification agreements shall be calculated using the methodology for calculating capital relief as provided in § 1240.14 of this part.

(i) *CEMultiplier* for participation agreements is set to 1.0.

§ 1240.12 Counterparty Haircut for single-family whole loans and guarantees.

(a) The amount by which credit enhancement lowers the $GrossCreditRiskCapReq_{bps}$ for single-family whole loans and guarantees must be reduced to account for the risk that the counterparty is unable to pay claims.

(b) An Enterprise shall determine the *CPHaircut* using Table 17.

Table 17: *CPHaircut* by Rating, Mortgage Concentration Risk, Segment, and Product

	Mortgage Concentration Risk: Not High			Mortgage Concentration Risk: High		
Counterparty Rating	New Originations, Performing Seasoned, and RPLs		NPLs	New Originations, Performing Seasoned, and RPLs		NPLs
	30 Year Product	20/15 Year Product		30 Year Product	20/15 Year Product	
1	1.8%	1.3%	0.6%	2.8%	2.0%	0.9%
2	4.5%	3.5%	2.0%	7.3%	5.6%	3.2%
3	5.2%	4.0%	2.4%	8.3%	6.4%	3.9%
4	11.4%	9.5%	6.9%	17.2%	14.3%	10.4%
5	14.8%	12.7%	9.9%	20.9%	18.0%	14.0%
6	21.2%	19.1%	16.4%	26.8%	24.2%	20.8%
7	40.0%	38.2%	35.7%	43.7%	41.7%	39.0%
8	47.6%	46.6%	45.3%	47.6%	46.6%	45.3%

§ 1240.13 Net credit risk capital requirement for single-family whole loans and guarantees.

(a) The net credit risk capital requirement for a single-family whole loan and guarantee is the $GrossCreditRiskCapReq_{bps}$ adjusted for the loan-level credit enhancement benefit and *CPHaircut*.

(b) For a loan with loan-level credit enhancement, an Enterprise shall determine the net credit risk capital requirement in basis points ($NetCreditRiskCapReq_{bps}$) using the following equation:

$$NetCreditRiskCapReq_{bps} = GrossCreditRiskCapReq_{bps} \times (1 - (1 - CEMultiplier) \times (1 - CPHaircut))$$

(c) For a loan without loan-level credit enhancement, an Enterprise shall determine the net credit risk capital requirement in basis points ($NetCreditRiskCapReq_{bps}$) using the following equation:

$$NetCreditRiskCapReq_{bps} = GrossCreditRiskCapReq_{bps}$$

(d) An Enterprise shall determine the net credit risk capital requirement in dollars (*NetCreditRiskCapReq$*) using the following equation:

$$NetCreditRiskCapReq_{\$} = \text{UPB} \times NetCreditRiskCapReq_{bps} / 10{,}000$$

(e) The aggregate net credit risk capital requirement for all single-family whole loans and guarantees (*NetCreditRiskCapReq$_SFWL*) is the sum of each loan's *NetCreditRiskCapReq$*.

$$NetCreditRiskCapReq_{\$\_SFWL} = \sum_{\forall SFWL} NetCreditRiskCapReq_{\$}$$

§ 1240.14 Single-family credit risk transfer capital relief for single-family whole loans and guarantees.

(a) A single-family credit risk transfer ("single-family CRT") is a credit risk transfer where the whole loans and guarantees underlying the CRT, or referenced by the CRT, are single-family whole loans and guarantees. Single-family CRTs may reduce *NetCreditRiskCapReq$_SFWL*. The reduction is called capital relief. The methodology for calculating capital relief combines aggregate credit risk capital requirements and expected losses on the single-family whole loans and guarantees underlying or referenced by the single-family CRT, tranche structure, ownership, loss timing, and counterparty credit risk. The methodology is provided in § 1240.15 of this part.

(b) The steps for calculating capital relief from a single-family CRT are as follows:

(1) Identify the single-family whole loans and guarantees underlying or referenced by the CRT.

(2) Calculate the aggregate net credit risk capital requirements and expected losses on the single-family whole loans and guarantees underlying or referenced by the CRT.

(3) Distribute the aggregate net credit risk capital requirements and expected losses across the tranches of the CRT so that relatively higher capital requirements are allocated to the more risky junior tranches that are the first to absorb losses, and relatively lower requirements are allocated to the more senior tranches.

(4) Identify capital relief, adjusting for an Enterprise's retained tranche interests.

(5) Adjust capital relief for loss timing and counterparty credit risk.

(6) Calculate total capital relief by adding up capital relief for each tranche in the CRT.

§ 1240.15 Calculation of capital relief from a single-family CRT.

(a) To calculate capital relief from a single-family CRT, an Enterprise must have data that enables it to assign accurately the parameters described in paragraphs (b) and (c) of this section.

(1) Data used to assign the parameters must be the most currently available data. If the contracts governing the single-family CRT require payments on a monthly or quarterly basis, the data used to assign the parameters must be no more than 91 calendar days old.

(2) If an Enterprise does not have the data to assign the parameters described in paragraphs (b) and (c) of this section, then an Enterprise must treat the single-family CRT as if no capital relief had occurred.

(b) To calculate capital relief from a single-family CRT, an Enterprise must have accurate data on the following set of inputs:

(1) *CRT tranche attachment point.* An Enterprise must have accurate information on each tranche's attachment point (*ATCH*) in the single-family CRT. For a given tranche, ATCH represents the threshold at which credit losses of principal will first be allocated. For a given tranche, *ATCH* equals 10,000 multiplied by the ratio of the current dollar amount of underlying subordinated tranches relative to the current dollar amount of all tranches. *ATCH* is expressed in basis points or as a value between zero and 10,000.

(2) *CRT tranche detachment point.* An Enterprise must have accurate information on each tranche's detachment point (*DTCH*) in the single-family CRT. For a given tranche, DTCH represents the threshold at which credit losses of principal would result in total loss of principal. For a given tranche, *DTCH* equals the sum of the tranche's *ATCH* and 10,000 multiplied by the ratio of the current dollar amount of tranches that are *pari passu* with the tranche (that is, have equal seniority with respect to credit risk) to the current dollar amount of all tranches. *DTCH* is expressed in basis points or as a value between zero and 10,000.

(3) *Capital markets risk relief percentage by tranche.* An Enterprise must have accurate information on each tranche's capital markets risk relief percentage ($CM_{\%}$) in the single-family CRT. For a given tranche, $CM_{\%}$ is the percentage of the tranche sold in the capital markets. $CM_{\%}$ is expressed as a value between 0% and 100%.

(4) *Contractual loss sharing risk relief percentage by tranche.* An Enterprise must have accurate information on each tranche's contractual loss sharing risk relief percentage ($LS_{\%}$) in the single-family CRT. For a given tranche, $LS_{\%}$ is the percentage of the tranche that is either insured, reinsured, or afforded coverage through lender

reimbursement of credit losses of principal. $LS_{\%}$ is expressed as a value between 0% and 100%.

(5) *Credit Risk Capital on the Underlying Reference Pool.* The Enterprises must have accurate data on each pool group's credit risk capital ($PGCRC_{bps}$) in the single-family CRT. $PGCRC_{bps}$ is expressed in basis points or as a value between zero and 10,000. For each pool group of single-family whole loans and guarantees in the single-family CRT, $PGCRC_{bps}$ is calculated in one of the following ways:

(i) For single-family CRTs where the contractual terms of the single-family CRT indicate that the single-family CRT will not convey the counterparty credit risk associated with loan-level credit enhancement on the single-family whole loans and guarantees underlying the single-family CRT, then $PGCRC_{bps}$ is calculated using the aggregate net credit risk capital requirement for all single-family whole loans and guarantees underlying the given pool group assuming a 0% *CPHaircut* as follows:

$$PGCRC_{bps} = 10{,}000 * \frac{\sum_{\forall SFWL \in PoolGroup} \left(\left(UPB_{\$} * \ GrossCreditRiskCapReq_{bps} \text{ x } CE\ Multiplier \right) \Big/ 10{,}000 \right)}{\sum_{\forall SFWL \in PoolGroup} UPB_{\$}}$$

(ii) For all other single-family CRTs, $PGCRC_{bps}$ is calculated using the aggregate net credit risk capital requirement for all single-family whole loans and guarantees underlying the given pool group as follows:

$$PGCRC_{bps} = 10{,}000 * \frac{\sum_{\forall SFWL \in PoolGroup} NetCreditRiskCapReq_{\$}}{\sum_{\forall SFWL \in PoolGroup} UPB_{\$}}$$

(6) *CRT expected losses.* An Enterprise must have accurate data on total lifetime net expected credit risk losses ($PGEL_{bps}$) on the whole single-family loans and guarantees underlying each pool group in the single-family CRT. $PGEL_{bps}$ shall be calculated

internally by an Enterprise. $PGEL_{bps}$ does not include the operational risk capital requirement or going-concern buffer. $PGEL_{bps}$ is expressed in basis points or as a value between zero and 10,000. For each pool group, $PGEL_{bps}$ is calculated in one of the following ways:

(i) For single-family CRTs where the contractual terms of the single-family CRT indicate that the single-family CRT will not convey the counterparty credit risk associated with MI on the single-family whole loans and guarantees underlying the single-family CRT, $PGEL_{bps}$ reflects an Enterprise's internal calculation of aggregate lifetime net expected credit risk losses on all single-family whole loans and guarantees underlying the given pool group while assuming no counterparty haircuts on MI.

(ii) For all other single-family CRTs, $PGEL_{bps}$ reflects an Enterprise's internal calculation of aggregate lifetime net expected credit risk losses on all single-family whole loans and guarantees underlying the given pool group.

(7) *Counterparty collateral on loss sharing transactions.* An Enterprise must have accurate data on the dollar amounts of counterparty collateral ($CntptyCollat_{\$}$) for each counterparty by tranche and pool group from a single-family CRT involving contractual loss sharing. For a given counterparty, tranche, and pool group, $CntptyCollat_{\$}$ is the dollar amount of collateral to fulfill the counterparty's trust funding obligation for loss sharing. $CntptyCollat_{\$}$ is expressed in dollar terms as a value greater than or equal to $0.

(8) *Counterparty quota shares on loss sharing transactions.* An Enterprise must have accurate information on counterparty quota shares on contractual loss sharing transactions for each counterparty by tranche and pool group. For a given counterparty,

tranche, and pool group, the counterparty share is the percentage of $LS_{\%}$ that is insured, reinsured, or afforded coverage through lender reimbursement of credit losses of principal by the given counterparty ($CntptyShare_{\%}$). $CntptyShare_{\%}$ is expressed as a value between 0% and 100%.

(9) *Counterparty ratings on loss sharing transactions.* An Enterprise must have internally generated ratings for counterparties on contractual loss sharing transactions. The internally generated ratings must be converted into counterparty financial strength ratings consistent with Table 3: Counterparty Financial Strength Ratings, of this part.

(10) *Counterparty mortgage concentration risk on loss sharing transactions.* An Enterprise must have an internally generated indicator for mortgage concentration risk for the counterparties on contractual loss sharing transactions. The internally generated indicator for mortgage concentration risk must be converted into ratings that reflect the following categories: *High* and *Not High*. An Enterprise should designate counterparties with a significant concentration of mortgage credit as *High*. An Enterprise should designate all other counterparties as *Not High.*

(11) *CRT loss timing factor*. (i) Table 18 sets forth loss timing factors which account for maturity differences between the CRT and the CRT's underlying single-family whole loans and guarantees. Maturity differences arise when the CRT's maturity date arises before the maturity dates on the underlying single-family whole loans and guarantees. The loss timing factors reflect estimates of the cumulative percentages of lifetime losses by the number of months between the CRT's original closing date (or effective date) and the maturity date on the CRT such that CRTs with longer maturities

cover more lifetime losses. The loss timing factors also vary by original amortization term and OLTVs on the underlying single-family whole loans and guarantees.

(ii) Using Table 18, the Enterprises must calculate a single-family CRT loss timing factor (*CRTLT*$_{\%}$) for each pool group. *CRTLT*$_{\%}$ is expressed as a value between 0% and 100%. To calculate the *CRTLT*$_{\%}$, an Enterprise must have the following information by pool group at the time of deal issuance:

(A) CRT's original closing date (or effective date) and the maturity date on the CRT;

(B) UPB share of single-family whole loans and guarantees in the pool group that have original amortization terms of less than or equal to 189 months (*CRTF15*$_{\%}$); and

(C) UPB share of single-family whole loans and guarantees in the pool group that have original amortization terms greater than 189 months and OLTVs of less than or equal to 80 percent (*CRT80NotF15*$_{\%}$).

(iii) An Enterprise must use the following method to calculate *CRTLT*$_{\%}$ for each pool group:

(A) Calculate CRT months to maturity (*CRTMthstoMaturity*) using one of the following methods:

(*1*) For single-family CRTs with reimbursement based upon occurrence or resolution of delinquency, *CRTMthstoMaturity* is the difference between the CRT's maturity date and original closing date, except for the following:

(*i*) If the coverage based upon delinquency is between 1 and 3 months, add 24 months to the difference between the CRT's maturity date and original closing date.

(*ii*) If the coverage based upon delinquency is between 4 and 6 months, add 18 months to the difference between the CRT's maturity date and original closing date.

(*2*) For all other single-family CRTs, *CRTMthstoMaturity* is the difference between the CRT's maturity date and original closing date.

(B) If *CRTMthstoMaturity* is a multiple of 12, then an Enterprise must use the first column of Table 18 to identify the row matching *CRTMthstoMaturity* and take a weighted average of the three loss timing factors in columns 2, 3, and 4 as follows:

$$CRTLT_{\%} = (CRTLT15 * CRTF15_{\%}) + (CRTLT80Not15 * CRT80NotF15_{\%}) + \left(CRTLTGT80Not15 * (1 - CRT80NotF15_{\%} - CRTF15_{\%})\right)$$

(C) If *CRTMthstoMaturity* is not a multiple of 12, an Enterprise must use the first column of Table 18 to identify the two rows that are closest to *CRTMthstoMaturity* and take a weighted average between the two rows of loss timing factors using linear interpolation, where the weights reflect *CRTMthstoMaturity.*

Table 18: Single-family CRT Loss Timing Factors

CRTMthstoMaturity: (#1) Number of months from the single-family CRT's original closing date (or effective date) to the maturity date on the CRT	***CRT Loss Timing Factors***		
	***CRTLT*15**: (#2) CRTLT for pool groups backed by single-family whole loans and guarantees with original amortization terms <= 189 months	***CRTLT*80*Not*15**: (#3) CRTLT for pool groups backed by single-family whole loans and guarantees with original amortization terms > 189 months and OLTVs <= 80 percent	***CRTLTGT*80*Not*15**: (#4) CRTLT for pool groups backed by single-family whole loans and guarantees with original amortization terms > 189 months and OLTVs > 80 percent
0	0%	0%	0%
12	1%	0%	0%
24	6%	3%	2%
36	21%	13%	11%
48	44%	31%	26%

CRTMthstoMaturity: (#1) Number of months from the single-family CRT's original closing date (or effective date) to the maturity date on the CRT	***CRT Loss Timing Factors***		
	***CRTLT*15**: (#2) CRTLT for pool groups backed by single-family whole loans and guarantees with original amortization terms <= 189 months	***CRTLT*80*Not*15**: (#3) CRTLT for pool groups backed by single-family whole loans and guarantees with original amortization terms > 189 months and OLTVs <= 80 percent	***CRTLTGT*80*Not*15**: (#4) CRTLT for pool groups backed by single-family whole loans and guarantees with original amortization terms > 189 months and OLTVs > 80 percent
60	66%	49%	43%
72	82%	65%	58%
84	90%	74%	68%
96	94%	80%	76%
108	96%	85%	81%
120	98%	88%	86%
132	99%	91%	89%
144	99%	93%	92%
156	100%	94%	94%
168	100%	96%	95%
180	100%	96%	96%
192	100%	97%	97%
204	100%	98%	98%
216	100%	98%	98%
228	100%	98%	98%
240	100%	99%	99%
252	100%	99%	99%
264	100%	99%	99%
276	100%	99%	99%
288	100%	99%	99%
300	100%	100%	100%
312	100%	100%	100%
324	100%	100%	100%
336	100%	100%	100%
348	100%	100%	100%
360	100%	100%	100%

(12) *Aggregate unpaid principal balance by pool group.* An Enterprise must have accurate information on each pool group's aggregate unpaid principal balance (*PGUPB$*).

(c) An Enterprise must use the parameters described in paragraph (b) of this section to calculate CRT capital relief, by single-family CRT pool group, using the following steps:

(1) An Enterprise must distribute $PGCRC_{bps}$, by pool group, to the tranches of the CRT, while controlling for $PGEL_{bps}$. For a given pool group and tranche, tranche credit risk capital ($TCRC_{bps}$) is as follows:

$$TCRC_{bps} = (DTCH - ATCH) * \left[\max\left(0, \min\left(\left[\frac{PGCRC_{bps} + PGEL_{bps} - ATCH}{DTCH - ATCH}\right], 1\right)\right) - \max\left(0, \min\left(\left[\frac{PGEL_{bps} - ATCH}{DTCH - ATCH}\right], 1\right)\right)\right]$$

$TCRC_{bps}$ takes values between 0 and 10,000. $TCRC_{bps}$ must be calculated for each tranche in the single-family CRT.

(2) For each pool group and tranche in a single-family CRT, an Enterprise must use the following formulae to identify the capital relief from the capital markets ($CMTCRC_{bps}$) and loss sharing ($LSTCRC_{bps}$) portions of the single-family CRT:

$$CMTCRC_{bps} = CM_{\%} * TCRC_{bps} * CRTLT_{\%}$$

$$LSTCRC_{bps} = LS_{\%} * TCRC_{bps} * CRTLT_{\%}$$

$CMTCRC_{bps}$ and $LSTCRC_{bps}$ are expressed in basis points and take values between 0 and 10,000.

(3) For loss sharing transactions, an Enterprise must determine the uncollateralized counterparty exposure ($CntptyExposure_{bps}$) and counterparty credit risk ($CntptyCreditRisk_{bps}$) by pool group and tranche.

(i) For each pool group, tranche and counterparty, an Enterprise must use the following formula to calculate $CntptyExposure_{bps}$:

$$CntptyExposure_{bps} = \max\left(\left[CntptyShare_{\%} * LSTCRC_{bps} - 10{,}000 * \frac{CntptyCollat_{\$}}{PGUPB_{\$}}\right], 0\right)$$

CntptyExposure$_{bps}$ takes values between 0 and 10,000.

(ii) For each pool group, tranche and counterparty, an Enterprise must determine *CntptyCreditRisk*$_{bps}$. An Enterprise must use its internally generated counterparty ratings converted into the counterparty ratings provided in Table 3: Counterparty Financial Strength Ratings, and its internally generated indicator for mortgage concentration risk converted into ratings that reflect *High* and *Not High* together with the *CPHaircut*s for New Origination Loan, Performing Seasoned Loan, and RPLs from Table 17: *CPHaircut* by Rating, Mortgage Concentration Risk, Segment, and Product, and the following formula to calculate *CntptyCreditRisk*$_{bps}$:

$$CntptyCreditRisk_{bps} = CntptyExposure_{bps} * CPHaircut$$

CntptyCreditRisk$_{bps}$ takes values between 0 and 10,000.

(4) For each pool group in the single-family CRT, an Enterprise must calculate aggregate capital relief (*PGCapRelief*$_{bps}$) across all tranches and counterparties associated with the given pool group using the following formula:

$$PGCapRelief_{bps} = \sum_{\forall Tranches \in P} \left(CMTCRC_{bps} + LSTCRC_{bps}\right) - \sum_{\forall Tranches\ \&\ Cntpty \in P} \left(CntptyCreditRisk_{bps}\right)$$

(5) An Enterprise must calculate total capital relief in dollars for the entire single-family CRT (*CapRelief*$_{\$}$) by adding up the capital relief in dollars from each pool group as follows:

$$CapRelief_{\$} = \sum_{\forall PoolGroups} \frac{PGCapRelief_{bps}}{10{,}000} * (PGUPB_{\$})$$

§ 1240.16 Calculation of total capital relief for single-family whole loans and guarantees.

To calculate total capital relief across all single-family CRTs (*TotalCapRelief$_SFWL*), an Enterprise must aggregate capital relief using the following:

$$TotalCapRelief_{\$\_SFWL} = \sum_{\forall CRT} CapRelief_{\$\_CRT}$$

§ 1240.17 Market risk capital requirement for single-family whole loans.

(a) Each single-family whole loan with market risk exposure is subject to the single-family whole loan market risk capital requirement. There is no market risk exposure for single-family guarantees. The market risk capital requirement for a single-family whole loan is limited to spread risk.

(b) The single-family whole loan market risk capital requirement in dollars (*MarketRiskCapReq$*) utilizes different calculation methodologies based on the loan product type and performance status.

(1) The dollar amount of the *MarketRiskCapReq$* for an RPL or NPL is calculated as follows:

MarketRiskCapReq$ = *Market Value* x 0.0475

(2) The dollar amount of the *MarketRiskCapReq$* for a performing loan is determined by an Enterprise using its internal market risk model.

(c) The aggregate market risk capital requirement for all single-family whole loans (*MarketRiskCapReq$_SFWL*) is the sum of each loan's *MarketRiskCapReq$*.

$$MarketRiskCapReq_{\$\_SFWL} = \sum_{\forall SFWL} MarketRiskCapReq_{\$}$$

§ 1240.18 Market risk capital requirement for single-family securities.

(a) Enterprise- and Ginnie Mae-guaranteed single-family mortgage backed securities (MBSs) and collateralized mortgage obligations (CMOs) (collectively

"*SFMBS*") held in an Enterprise's portfolio, have market risk exposure and are subject to a market risk capital requirement.

(b) The dollar amount of the $MarketRiskCapReq_{\$}$ for *SFMBS* is determined by an Enterprise using its internal market risk model.

(c) The aggregate market risk capital requirement for *SFMBS* ($MarketRiskCapReq_{\$\_SFMBS}$) is the sum of each security's $MarketRiskCapReq_{\$}$:

$$MarketRiskCapReq_{\$\_SFMBS} = \sum_{\forall SFMBS} MarketRiskCapReq_{\$}$$

§ 1240.19 Operational risk capital requirement for single-family whole loans and guarantees.

(a) Each single-family whole loan and guarantee is subject to an 8 basis point operational risk capital requirement ($OperationalRiskCapReq_{\$}$).

(b) The dollar amount of the $OperationalRiskCapReq_{\$}$ is calculated as follows:

(1) If the Enterprise holds only credit risk or both credit and market risk, the calculation is as follows:

$OperationalRiskCapReq_{\$}$ = *UPB* x 0.0008

(2) Otherwise, if the Enterprise holds only market risk the calculation is as follows:

$OperationalRiskCapReq_{\$}$ = *Market Value* x 0.0008

(c) The aggregate operational risk capital requirement for all single-family whole loans and guarantees ($OperationalRiskCapReq_{\$\_SFWL}$) is the sum of each loan's $OperationalRiskCapReq_{\$}$.

$$OperationalRiskCapReq_{\$\_SFWL} = \sum_{\forall SFWL} OperationalRiskCapReq_{\$}$$

§ 1240.20 Operational risk capital requirement for single-family securities.

(a) Each *SFMBS* is subject to an 8 basis point operational risk capital requirement.

(b) The operational risk capital requirement for *SFMBS* in dollar terms (*OperationalRiskCapReq*$) is calculated as follows:

OperationalRiskCapReq$ = *SFMBS Market Value* x *0.0008*

(c) The aggregate operational risk capital requirement for all *SFMBS* (*OperationalRiskCapReq*$_{SFMBS}$) is the sum of each security's *OperationalRiskCapReq*$.

$$OperationalRiskCapReq_{\$\_SFMBS} = \sum_{\forall SFMBS} OperationalRiskCapReq_{\$}$$

§ 1240.21 Going-concern buffer requirement for single-family whole loans and guarantees.

(a) Each single-family whole loan and guarantee is subject to a 75 basis point going-concern buffer requirement (*GCBufferReq*$).

(b) The dollar amount of the *GCBufferReq*$ is calculated as follows:

(1) If the Enterprise holds only credit risk or both credit and market risk, the calculation is as follows:

GCBufferReq$ = *UPB* x 0.0075

(2) Otherwise, if the Enterprise holds only market risk the calculation is as follows:

GCBufferReq$ = *Market Value* x 0.0075

(c) The aggregate going-concern buffer requirement for all single-family whole loans and guarantees (*GCBufferReq*$_{SFWL}$) is the sum of each loan and guarantee's *GCBufferReq*$.

$$GCBufferReq_{\$\_SFWL} = \sum_{\forall SFWL} GCBufferReq_{\$}$$

§ 1240.22 Going-concern buffer requirement for single-family securities.

(a) Each *SFMBS* is subject to a 75 basis point going-concern buffer requirement.

(b) The going-concern buffer requirement for an *SFMBS* in dollar terms (*GCBufferReq$*) is calculated as follows:

$$GCBufferReq_{\$} = SFMBS\ Market\ Value \times 0.0075$$

(c) The aggregate going-concern buffer requirement for all *SFMBS* (*GCBufferReq$_SFMBS*) is the sum of each security's *GCBufferReq$*.

$$GCBufferReq_{\$\_SFMBS} = \sum_{\forall SFMBS} GCBufferReq_{\$}$$

§ 1240.23 Aggregate risk-based capital requirement for single-family whole loans, guarantees, and related securities.

(a) As provided in § 1240.5 of this part, the aggregate risk-based capital requirement for single-family whole loans, guarantees, and related securities is the cumulative total of: the aggregate net credit risk capital requirement; the aggregate market risk capital requirement for single-family whole loans and securities with market exposure; the aggregate operational risk capital requirement, and the aggregate going-concern buffer requirement, net of the total capital relief from single-family CRTs.

(b) The aggregate risk-based capital requirement for all single-family whole loans, guarantees, and related securities (*RiskBasedCapReq$_SFWLGS*) is calculated as follows:

$$RiskBasedCapReq_{\$\_SFWLGS} = NetCreditRiskCapReq_{\$\_SFWL} + MarketRiskCapReq_{\$\_SFWL} + MarketRiskCapReq_{\$\_SFMBS} + OperationalRiskCapReq_{\$\_SFWL} + OperationalRiskCapReq_{\$\_SFMBS} GCBufferReq_{\$\_SFWL} + GCBufferReq_{\$\_SFMBS} - TotalCapRelief_{\$\_SFWL}$$

§ 1240.24 Private-label securities risk-based capital requirement components.

The risk-based capital requirement for a private-label security (PLS), including PLS wraps, is the cumulative total of the following capital requirements:

(a) A credit risk capital requirement as provided in § 1240.25 of this part;

(b) A market risk capital requirement as provided in § 1240.26 of this part;

(c) An operational risk capital requirement as provided in § 1240.27 of this part; and

(d) A going-concern buffer requirement as provided in § 1240.28 of this part.

§ 1240.25 Credit risk capital requirement for a PLS.

(a) Each PLS to which an Enterprise has credit risk exposure is subject to a credit risk capital requirement.

(b) An Enterprise must calculate the credit risk capital requirement for a PLS by taking the following steps:

(1) Calculate the risk weight (*RW*) of a PLS; and

(2) Multiply the *RW* of a PLS by 8 percent.

(c) To determine the *RW* for a PLS, an Enterprise must use the Simplified Supervisory Formula Approach (SSFA) as modified and provided below in this section (*FHFA SSFA*). *FHFA SSFA* provided in this section follows the SSFA provided in § 217.43(a) through (d) of this title, as of the effective date of this part, with the following exceptions:

(1) Excludes § 217.43(b)(2)(v)(A) through (B) of this title:

(2) Assigns the weighted-average total capital requirement of the underlying exposures K_G;

(3) Assigns the supervisory calibration parameter p for a PLS wrap;

(4) Removes references to the n^{th} to default credit derivatives; and

(5) Substitutes references to a bank with references to an Enterprise.

(d) To use *FHFA SSFA* to determine the risk weight for a PLS or PLS Wrap, also known as a securitization exposure, an Enterprise must have data that enables it to assign accurately the parameters described in paragraph (e) of this section. The data must be the most currently available data. If the contracts governing the underlying exposures of the securitization require payments on a monthly or quarterly basis, the data must be no more than 91 calendar days old. An Enterprise that does not have the appropriate data to assign the parameters described in paragraph (e) of this section must assign a risk weight of 1,250 percent to the exposure.

(e) To calculate the risk weight for a securitization exposure using *FHFA SSFA*, an Enterprise must have accurate data on the following five inputs to *FHFA SSFA* calculation:

(1) K_G is the weighted-average total capital requirement of the underlying exposures. K_G is 8 percent.

(2) Parameter W is expressed as a decimal value between zero and one. Parameter W is the ratio of the sum of the dollar amounts of any underlying exposures of the securitization to include collateral backing the PLS or PLS Wrap that meet any of the criteria as set forth in paragraphs (e)(2)(i) through (vi) of this section, to the balance, measured in dollars, of underlying exposures:

(i) Ninety days or more past due;

(ii) Subject to a bankruptcy or insolvency proceeding;

(iii) In the process of foreclosure;

(iv) Held as real estate owned;

(v) Has contractually deferred payments for 90 days or more; or

(vi) Is in default.

(3) Parameter *ATCH* is the attachment point for the exposure, which represents the threshold at which credit losses will first be allocated to the exposure. Parameter *ATCH* equals the ratio of the current dollar amount of underlying exposures that are subordinated to the exposure of an Enterprise to the current dollar amount of underlying exposures. Any reserve account funded by the accumulated cash flows from the underlying exposures that is subordinated to an Enterprise's securitization exposure may be included in the calculation of parameter *ATCH* to the extent that cash is present in the account. Parameter *ATCH* is expressed as a decimal value between zero and one.

(4) Parameter *DTCH* is the detachment point for the exposure, which represents the threshold at which credit losses of principal allocated to the exposure would result in a total loss of principal. Parameter *DTCH* equals parameter *ATCH* plus the ratio of the current dollar amount of the securitization exposures that are *pari passu* with the exposure (that is, have equal seniority with respect to credit risk) to the current dollar amount of the underlying exposures. Parameter *DTCH* is expressed as a decimal value between zero and one.

(5) A supervisory calibration parameter, p, is equal to 0.5 for securitization exposures that are not resecuritization exposures and equal to 1.5 for resecuritization exposures. A PLS Wrap has a supervisory calibration parameter equal to the supervisory calibration parameter of the underlying PLS.

(f) K_G and W are used to calculate K_A, the augmented value of K_G, which reflects the observed credit quality of the underlying exposures. K_A is defined in paragraph (g) of this section. The values of parameters *ATCH* and *DTCH*, relative to K_A, determine the risk weight assigned to a securitization exposure as described in paragraph (g) of this section. The risk weight assigned to a securitization exposure, or portion of a securitization exposure, as appropriate, is the larger of the risk weight determined in accordance with paragraphs (f) or (g) of this section, and a risk weight of 20 percent.

(1) When the detachment point, parameter DTCH, for a securitization exposure is less than or equal to K_A, the exposure must be assigned a risk weight of 1,250 percent.

(2) When the attachment point, parameter ATCH, for a securitization exposure is greater than or equal to K_A, the Enterprise must calculate the risk weight in accordance with paragraph (g) of this section.

(3) When ATCH is less than K_A and DTCH is greater than K_A, the risk weight is a weighted-average of 1,250 percent and 1,250 percent times $K_{FHFA\ SSFA}$ calculated in accordance with paragraph (g) of this section. For the purpose of this weighted-average calculation:

(i) The weight assigned to 1,250 percent equals

$$\frac{K_A - ATCH}{DTCH - ATCH}$$

(ii) The weight assigned to 1,250 percent times $K_{FHFA\ SSFA}$ equals

$$\frac{DTCH - K_A}{DTCH - ATCH}$$

(iii) The risk weight will be set equal to

$$RW = \left[\left(\frac{K_A - ATCH}{DTCH - ATCH}\right) * 1{,}250\ percent\right] + \left[\left(\frac{DTCH - K_A}{DTCH - ATCH}\right) * 1{,}250\ percent * K_{FHFA\ SSFA}\right]$$

(g) *FHFA SSFA* equation involves the following steps:

(1) An Enterprise must define the following parameters:

$$K_A = (1 - W) * K_G + (0.5 * W)$$

$$a = -\frac{1}{p * K_A}$$

$$u = DTCH - K_A$$

$$l = max(ATCH - K_A\ , 0)$$

$$e = 2.71828, the\ base\ of\ the\ natural\ logarithm$$

(2) An Enterprise must calculate $K_{FHFA\ SSFA}$ according to the following equation:

$$K_{FHFA\ SSFA} = \frac{e^{a*u} - e^{a*l}}{a * (u - l)}$$

(3) The risk weight for the exposure (expressed as a percent) is equal to:

$$K_{FHFA\ SSFA} * 1{,}250$$

(h) Determine the credit risk capital requirement for a PLS in bps (*CreditRiskCapReq*$_{bps}$) as follows:

CreditRiskCapReq$_{bps}$ = *RW* x 8% x 10,000

(i) Determine the credit risk capital requirement for a PLS in dollar terms (*CreditRiskCapReq*$) as follows:

CreditRiskCapReq$_{\$}$ = *Market Value* x *CreditRiskCapReq*$_{bps}$ / 10,000

§ 1240.26 Market risk capital requirement for a PLS.

(a) Each PLS to which an Enterprise has market risk exposure is subject to a market risk capital requirement. The market risk capital requirement of a PLS wrap is zero as an Enterprise does not have market risk exposure to a PLS wrap.

(b) The $MarketRiskCapReq_{bps}$ is equal to the product of the PLS spread duration as estimated by the Enterprise and a shock in the spread of the PLS of 265 bps as follows:

$$MarketRiskCapReq_{bps} = 265_{bps} \text{ x } SpreadDuration$$

(c) The $MarketRiskCapReq_{\$}$ is calculated as follows:

$$MarketRiskCapReq_{\$} = Market\ Value \text{ x } MarketRiskCapReq_{bps} / 10{,}000$$

§ 1240.27 Operational risk capital requirement for a PLS.

(a) Each Enterprise PLS exposure is subject to an operational risk capital requirement.

(b) The operational risk capital requirement for a PLS in dollar terms ($OperationalRiskCapReq_{\$}$) is calculated as follows:

$$OperationalRiskCapReq_{\$} = Market\ Value \text{ x } 0.0008$$

§ 1240.28 Going-concern buffer requirement for a PLS.

(a) Each Enterprise PLS exposure is subject to a going-concern buffer requirement **(***GCBufferReq*).

(b) The *GCBufferReq* for a PLS in dollar terms ($GCBufferReq_{\$}$) is calculated as follows:

$$GCBufferReq_{\$} = Market\ Value \text{ x } 0.0075$$

§ 1240.29 Aggregate risk-based capital requirement for PLS.

(a) The $RiskBasedCapReq_{\$}$ for a PLS is calculated as follows:

$$RiskBasedCapReq_{\$} = CreditRiskCapReq_{\$} + MarketRiskCapReq_{\$} + OperationalRiskCapReq_{\$} + GCBufferReq_{\$}$$

(b) The $RiskBasedCapReq_{\$}$ for all Enterprise PLS ($RiskBasedCapReq_{\$\_PLS}$) is calculated by aggregating $RiskBasedCapReq_{\$}$ for each PLS.

$$RiskBasedCapReq_{\$\_PLS} = \sum_{\forall PLS} RiskBasedCapReq_{\$}$$

§ 1240.30 Multifamily whole loans, guarantees, and related securities risk-based capital requirement components.

The risk-based capital requirement for multifamily whole loans, guarantees, and related securities is the cumulative total of the following capital requirements:

(a) A credit risk capital requirement, as provided in §§ 1240.31 through 1240.38 of this part;

(b) A market risk capital requirement for multifamily whole loans and securities with market exposure, as provided in §§ 1240.39 through 1240.40 of this part;

(c) An operational risk capital requirement, as provided in §§ 1240.41 through 1240.42 of this part; and

(d) A going-concern buffer requirement, as provided in §§ 1240.43 through 1240.44 of this part.

§ 1240.31 Multifamily whole loans and guarantees credit risk capital requirement methodology.

(a) The methodology for calculating the credit risk capital requirement for a multifamily whole loan and guarantee uses tables to determine the base credit risk capital requirement and risk factor multipliers to adjust the base credit risk capital requirement for risk factor variations not captured in the base tables. The methodology also provides

for a reduction in the credit risk capital requirement for multifamily whole loans and guarantees due to credit risk transfer transactions.

(b) The steps for calculating the credit risk capital requirement for multifamily whole loans and guarantees are as follows:

(1) Identify the loan data needed for the calculation of the multifamily whole loans and guarantees credit risk capital requirement.

(2) Assign each multifamily whole loan and guarantee into a multifamily loan segment, as specified in § 1240.32 of this part.

(3) Determine $BaseCapital_{bps}$ for each whole loan and guarantee using the loan's assigned multifamily loan segment and the appropriate segment-specific table, as specified in § 1240.33 of this part.

(4) Determine *TotalCombRiskMult* for each whole loan and guarantee based on the loan's assigned loan segment and risk characteristics, as specified in § 1240.34 of this part.

(5) Calculate $GrossCreditRiskCapReq_{bps}$ for each whole loan and guarantee by multiplying $BaseCapital_{bps}$ by *TotalCombRiskMult*, as specified in § 1240.35 of this part.

(6) Calculate $NetCreditRiskCapReq_{bps}$ as equal to $GrossCreditRiskCapReq_{bps}$ and determine the aggregate net credit risk capital requirement for multifamily whole loans and guarantees both as specified in § 1240.36 of this part. For multifamily whole loans and guarantees, there is no charter required credit enhancement and $NetCreditRiskCapReq_{bps}$ is equal to $GrossCreditRiskCapReq_{bps}$.

(7) Determine the capital relief from multifamily CRTs, as specified in §§ 1240.37 and 1240.38 of this part.

(c) The credit risk capital requirement applies to any Enterprise multifamily whole loan or guarantee with exposure to credit risk.

(d) Table 19 lists the loan data needed for the calculation of the multifamily whole loans and guarantees credit risk capital requirement. Table 19 contains variable names, definitions, acceptable values, and treatments for missing or unacceptable values.

Table 19: Multifamily Whole Loans and Guarantees Data Inputs

Variable	**Definition / Logic**	**Acceptable Value**	**Treatment of Missing or Unacceptable Value**
Acquisition Debt-Service Coverage Ratio (DSCR)	The Debt-Service-Coverage Ratio is the ratio of Net Operating Income (NOI) to the scheduled mortgage payment. If NOI is unavailable, use Net Cash Flow (NCF). Acquisition DSCR is the DSCR reported at the time the loan is acquired. For interest-only loans, use fully amortizing acquisition DSCR when determining $BaseCapital_{bps}$.	Greater than or equal to 0.	In a case where the acquisition DSCR is not available, use DSCR at the time the loan was underwritten as a substitute. For a newly acquired loan, the origination DSCR can be used as a proxy for the acquisition DSCR if the loan is acquired within six months of acquisition and an acquisition DSCR record is not available. If missing, use origination DSCR. If origination DSCR is missing, use DSCR at the time the loan was underwritten. If the DSCR at the time

Variable	Definition / Logic	Acceptable Value	Treatment of Missing or Unacceptable Value
			the loan is underwritten is missing, use 1.00.
Acquisition LTV	Acquisition LTV is the LTV at the time a loan is acquired.	Greater than or equal to 0.	Where the acquisition LTV is not available, use the LTV at the time the loan is underwritten. If acquisition LTV is missing, use origination LTV. If origination LTV is missing, use LTV at the time the loan is underwritten. If LTV at the time the loan is underwritten is missing, use 100%.
Amortization Term	The amortization term is the period that would take a borrower to pay a loan completely if the borrower only makes the scheduled payments, for a given loan balance, at a specified interest rate, and without making any balloon payment.	Non-negative integer in years.	If missing, use 31 years.
Interest-Only (IO)	A loan that requires only payment of interest without any principal amortization during all or part of the loan term.	Yes, No.	Yes.
Loan Term	The loan term is the period between origination and final loan payment (which may be a balloon	Non-negative integer in years.	If missing, use 11 years.

Variable	Definition / Logic	Acceptable Value	Treatment of Missing or Unacceptable Value
	payment) as stated in the loan origination documents.		
Mark-to-Market DSCR (MTMDSCR)	MTMDSCR is the DSCR stated on the most recent property operating statement. For interest-only loans, use fully amortizing MTMDSCR when determining $BaseCapital_{bps}$.	Greater than or equal to 0.	In a case where MTMDSCR is not available, the last observed DSCR can be marked to market using a property NOI index or an NOI estimate based on rent and expense indices. If the index is not sufficiently granular, either because of its frequency or geography, or with respect to a certain multifamily property type, use a more geographically broad index or a recently estimated mark-to-market value.
Mark-To-Market Loan-to-Value (MTMLTV) ratio	MTMLTV is an estimate of the current LTV, derived by marking to market the acquisition LTV using a multifamily property value index or property value estimate based on NOI and cap rate indices.	Greater than or equal to 0.	If missing, mark to market using an index. If the index is not sufficiently granular, either because of its frequency or geography or with respect to a certain multifamily property type, use more

Variable	Definition / Logic	Acceptable Value	Treatment of Missing or Unacceptable Value
			geographically broad index or a recently estimated mark-to-market value.
Market Value	The value of the loan reported in an Enterprise's fair value disclosures.		UPB.
Net Operating Income (NOI) / Net Cash Flow (NCF)	NOI is defined as the rental income generated by the property net of vacancy and property operating expenses. NCF is defined as NOI minus any below-the-line expenses, which usually include capital improvement reserves and leasing commissions.	Greater than or equal to 0.	Infer using origination LTV or origination DSCR. Alternatively, infer using actual MTMLTV or actual MTMDSCR.
Original Loan Size	The original loan size is the dollar amount of the loan at origination.	Non-negative dollar value.	$3,000,000.
Payment Performance	The payment status or history of a multifamily loan.	Performing, Delinquent, Re-performing (without Modification), Modified.	If missing, set to Modified.
Special Product	Multifamily loans that are Government-Subsidized, Student Housing, Rehab/Value-Add/Lease-Up, Supplemental.	Not a Special Product, Government-Subsidized, Student Housing, Rehab/Value-Add/Lease-Up, Supplemental.	If missing, set to Rehab/Value-Add/Lease-Up.

Variable	Definition / Logic	Acceptable Value	Treatment of Missing or Unacceptable Value
Unpaid Principal Balance (UPB$)	The remaining unpaid principal balance on the loan as of the reporting date.	UPB>$0	If missing, use $100,000,000.

§ 1240.32 Loan segments for multifamily whole loans and guarantees credit risk capital requirement.

(a) An Enterprise must assign each multifamily whole loan and guarantee in its portfolio with exposure to credit risk to a loan segment. Multifamily loan segments are determined based on the type of interest rate contract used in the whole loan or guarantee. The multifamily loan segments are: Multifamily Fixed Rate Mortgage (Multifamily FRM) and Multifamily Adjustable Rate Mortgage (Multifamily ARM).

(b) A multifamily whole loan and guarantee that has both a fixed rate period and an adjustable rate period, also known as a hybrid loan, should be classified and treated as a Multifamily FRM during the fixed rate period, and classified and treated as a Multifamily ARM during the adjustable rate period.

§ 1240.33 Base credit risk capital requirement for multifamily whole loans and guarantees.

An Enterprise must determine $BaseCapital_{bps}$ for a multifamily whole loan and guarantee by using the multifamily credit risk capital grid that corresponds to a particular loan segment, presented in Tables 20 and 21. A new acquisition is a multifamily whole loan or guarantee that was originated within five months or less.

(a) Multifamily FRM $BaseCapital_{bps}$ is shown in Table 20. For each whole loan and guarantee classified as Multifamily FRM, $BaseCapital_{bps}$ is the value in the cell in Table 20 determined using the whole loan or guarantee's acquisition DSCR and acquisition LTV in the case of a new acquisition, or using the whole loan or guarantee's MTMDSCR and MTMLTV in the case of a seasoned loan. For a multifamily IO whole loan and guarantee, an Enterprise must use the fully amortized payment to calculate acquisition DSCR and MTMDSCR.

Table 20: Multifamily FRM *BaseCapital*$_{bps}$

		Acquisition LTV or MTMLTV									
		LTV <=35%	35% < LTV <=45%	45% < LTV <=55%	55% < LTV <=65%	65% < LTV <=70%	70% < LTV <=75%	75% < LTV <=80%	80% < LTV <=90%	90% < LTV <=100%	LTV >100%
Acquisition DSCR or MTMDSCR	DSCR<1.00	415	480	610	870	996	1119	1226	1328	1378	1453
	1.00<= DSCR <1.15	359	413	520	735	843	943	1028	1118	1160	1224
	1.15<= DSCR< 1.20	321	368	460	645	740	825	895	978	1015	1071
	1.20<= DSCR< 1.25	298	338	418	578	660	733	778	855	895	955
	1.25<= DSCR< 1.30	266	303	375	520	593	645	690	755	790	843
	1.30<= DSCR< 1.35	251	283	345	470	528	568	608	670	700	745
	1.35<= DSCR< 1.50	231	259	315	428	475	510	548	610	640	685
	1.50<= DSCR< 1.65	201	218	250	315	345	375	408	455	498	561
	1.65<= DSCR< 1.80	175	185	205	245	270	298	330	378	423	490
	1.80<= DSCR< 1.95	129	138	155	190	210	235	258	325	375	450
	1.95<= DSCR< 2.10	118	122	130	163	180	204	221	299	351	430
	2.10<= DSCR< 2.25	106	110	118	149	165	188	203	286	339	420
	DSCR>=2.25	100	104	111	142	158	180	194	279	333	415

(b) Multifamily ARM $BaseCapital_{bps}$ is shown in Table 21. For each whole loan or guarantee classified as a multifamily ARM loan, $BaseCapital_{bps}$ is the value in the cell in Table 21 determined using the whole loan and guarantee's

acquisition DSCR and acquisition LTV in the case of a new acquisition, or using the whole loan or guarantee's MTMDSCR and MTMLTV in the case of a seasoned loan. For multifamily IO whole loans and guarantees, an Enterprise must use the fully amortized payment to calculate acquisition DSCR and MTMDSCR.

Table 21: Multifamily ARM *BaseCapital*$_{bps}$

		Acquisition LTV or MTMLTV									
		LTV <=35%	35% < LTV <=45%	45% < LTV <=55%	55% < LTV <=65%	65% < LTV <=70%	70% < LTV <=75%	75% < LTV <=80%	80% < LTV <=90%	90% < LTV <=100%	LTV >100 %
Acquisition DSCR or MTMDSCR	DSCR<1.00	647	691	745	1060	1223	1375	1508	1691	1831	2041
	1.00<= DSCR <1.25	569	603	638	902	1034	1159	1264	1424	1542	1720
	1.25<= DSCR< 1.30	506	535	567	797	908	1014	1101	1245	1349	1505
	1.30<= DSCR< 1.36	454	478	503	704	810	901	956	1089	1190	1341
	1.36<= DSCR< 1.42	410	430	452	630	720	789	847	962	1050	1183
	1.42<= DSCR< 1.47	361	390	408	568	637	688	747	854	931	1046
	1.47<= DSCR< 1.53	298	332	372	511	565	619	674	773	849	962
	1.53<= DSCR< 1.70	236	265	293	376	410	451	501	577	660	784
	1.70<= DSCR< 1.87	186	208	237	288	322	358	406	478	562	686
	1.87<= DSCR< 2.03	154	164	179	223	247	283	317	412	498	628
	2.03<= DSCR< 2.21	137	143	150	191	210	245	272	379	467	599
	2.21<= DSCR< 2.38	129	132	136	175	191	226	250	362	451	585
	DSCR>=2.38	125	127	128	167	182	217	239	354	443	577

§ 1240.34 Risk multipliers for multifamily whole loans and guarantees.

(a) Risk multipliers increase or decrease the credit risk capital requirement for multifamily whole loans and guarantees based on a multifamily loan's assigned loan segment and risk characteristics. The multifamily risk multipliers are presented in Table 22.

(b) The steps for calculating *TotalCombRiskMult* are as follows:

(1) Determine the appropriate multifamily risk multipliers values from Table 22 based on the loan's characteristics and assigned loan segment.

(2) Apply the appropriate formula to calculate the combined risk multiplier, *CombRiskMult*.

(3) Calculate the *TotalCombRiskMult* as the larger of *CombRiskMult* and a combined multiplier floor of 0.5.

Table 22: Multifamily Risk Multipliers

Risk Factor	Value or Range	Risk Multiplier
Payment Performance	Performing	1.00
	Delinquent	1.10
	Re-Performing (without Modification)	1.10
	Modified	1.20
Interest-Only	No	1.00
	Yes (during the interest-only period)	1.10
Original/Remaining Loan Term in Years (Yr)	Loan Term <= 1Yr	0.70
	1Yr < Loan Term <= 2Yr	0.75
	2Yr < Loan Term <= 3Yr	0.80
	3Yr < Loan Term <= 4Yr	0.85
	4Yr < Loan Term <= 5Yr	0.90
	5Yr < Loan Term <= 7Yr	0.95
	7Yr < Loan Term <= 10Yr	1.00
	Loan Term > 10Yr	1.15
Original Amortization Term	Amort. Term <= 20Yr	0.70
	20Yr < Amort. Term <= 25Yr	0.80

Risk Factor	Value or Range	Risk Multiplier
	25Yr < Amort. Term <= 30Yr	1.00
	Amort. Term > 30Yr	1.10
Original Loan Size	Loan Size <= $3,000,000	1.45
	$3,000,000 < Loan Size <= $5,000,000	1.15
	$5,000,000 < Loan Size <= $10,000,000	1.00
	$10,000,000 < Loan Size <= $25,000,000	0.80
	Loan Size > $25,000,000	0.70
Special Products	Government-Subsidized	0.60
	Not a Special Product	1.00
	Student Housing	1.15
	Rehab/Value-Add/Lease-Up	1.25
	Supplemental	Use FRM or ARM Capital Grid by adding supplemental UPB to the base loan and recalculating DSCR and LTV

(c) The following risk multiplier calculations are to be used for each respective multifamily whole loan and guarantee with the described characteristics:

(1) For each multifamily whole loan and guarantee that is a new acquisition, determine the appropriate risk multiplier values from Table 22 and apply the following formula to calculate *TotalCombRiskMult*:

TotalCombRiskMult = Max(*CombRiskMult*, 0.5) = Max(Payment Performance Multiplier x Interest-Only Multiplier x Original Loan Term Multiplier x Original Amortization Term Multiplier x Original Loan Size Multiplier x Special Products Multiplier, 0.5)

(2) For each multifamily whole loan and guarantee classified as a seasoned loan, determine the appropriate risk multiplier values from Table 22 and apply the following formula to calculate *TotalCombRiskMult*:

TotalCombRiskMult = Max(*CombRiskMult*, 0.5) = Max(Payment Performance Multiplier x Interest-Only Multiplier x Remaining Loan Term Multiplier x Original Amortization Term Multiplier x Original Loan Size Multiplier x Special Products Multiplier, 0.5)

(3) For each multifamily whole loan and guarantee defined as a supplemental loan, an Enterprise must determine the additional capital required for that supplemental loan, or supplemental loans if there is more than one supplemental loan on a property. The steps for calculating the additional capital are as follows:

(i) An Enterprise must recalculate DSCRs and LTVs for the original and supplemental loans using combined loan balances and combined income/payment information.

(ii) Using the recalculated DSCR and LTV for each supplemental loan, use Table 20 for a multifamily FRM, or Table 21 for a multifamily ARM, to calculate the credit risk capital.

(iii) For each supplemental loan, using the combined loan balance of the original and the supplemental, apply the loan size risk multiplier specified in Table 22 for the factor Original Loan Size.

(iv) The capital for a supplemental loan must be calculated as the difference between the combined capital requirements for the original and all previous supplemental loans using the combined DSCR, LTV, and loan balance, and the capital requirement for

the original loan plus other supplemental loans using the combined DSCR, LTV, and loan balance.

§ 1240.35 Gross credit risk capital requirement for multifamily whole loans and guarantees.

An Enterprise must determine $GrossCreditRiskCapReq_{bps}$ for each multifamily loan and guarantee as the product of $BaseCapital_{bps}$ and *TotalCombRiskMult* as follows:

$$GrossCreditRiskCapReq_{bps} = BaseCapital_{bps} \text{ x } TotalCombRiskMult$$

§ 1240.36 Net credit risk capital requirement for multifamily whole loans and guarantees.

(a) An Enterprise must determine the net credit risk capital requirement for a multifamily whole loan and guarantee ($NetCreditRiskCapReq_{bps}$). For a multifamily whole loan and guarantee, $NetCreditRiskCapReq_{bps}$ equals $GrossCreditRiskCapReq_{bps}$:

$$NetCreditRiskCapReq_{bps} = GrossCreditRiskCapReq_{bps}$$

(b) An Enterprise shall determine the net credit risk capital requirement in dollars ($NetCreditRiskCapReq_{\$}$) using the following equation:

$$NetCreditRiskCapReq_{\$} = \text{UPB x } NetCreditRiskCapReq_{bps} /10{,}000$$

(c) The aggregate net credit risk capital requirement for all multifamily whole loans and guarantees ($NetCreditRiskCapReq_{\$\_MFWL}$) is the sum of each loan's $NetCreditRiskCapReq_{\$}$.

$$NetCreditRiskCapReq_{\$\_MFWL} = \sum_{\forall MFWL} NetCreditRiskCapReq_{\$}$$

§ 1240.37 Multifamily credit risk transfer capital relief for multifamily whole loans and guarantees.

A multifamily credit risk transfer ("multifamily CRT") is a credit risk transfer where the underlying whole loans and guarantees backing the CRT, or referenced by the CRT, are multifamily whole loans and guarantees. A multifamily CRT may reduce required credit risk capital. The methodology for calculating the reduction, also known as capital relief, combines credit risk capital requirements and expected losses on the multifamily whole loans and guarantees underlying or referenced by the CRT, tranche structure, ownership, and counterparty credit risk. The methodology is provided in § 1240.38 of this part.

§ 1240.38 Calculation of capital relief for a multifamily CRT.

(a) To calculate capital relief for a multifamily CRT, an Enterprise must have data that enables it to assign accurately the parameters described in paragraphs (b) and (c) of this section.

(1) Data used to assign the parameters must be the most currently available data. If the contracts governing the multifamily CRT require payments on a monthly or quarterly basis, the data used to assign the relevant parameters must be no more than 91 calendar days old.

(2) If an Enterprise does not have the data to assign the parameters described in paragraphs (b) and (c) of this section, then an Enterprise must treat the multifamily CRT as if no capital relief had occurred.

(b) To calculate capital relief on a multifamily CRT, an Enterprise must have accurate data on the following parameters:

(1) *CRT tranche attachment point.* An Enterprise must have accurate information on each tranche's attachment point (*ATCH*) in the multifamily CRT. For a given tranche,

ATCH represents the threshold at which credit losses of principal will first be allocated. For a given tranche, *ATCH* equals the ratio of the current dollar amount of underlying subordinated tranches relative to the current dollar amount of all tranches all multiplied by 10,000. *ATCH* is expressed in basis points or as a value between zero and 10,000.

(2) *CRT tranche detachment point.* An Enterprise must have accurate information on each tranche's detachment point (*DTCH*) in the multifamily CRT. For a given tranche, DTCH represents the threshold at which credit losses of principal would result in total loss of principal. For a given tranche, *DTCH* equals the sum of the tranche's *ATCH* and 10,000 multiplied by the ratio of the current dollar amount of tranches that are *pari passu* with the tranche (that is, have equal seniority with respect to credit risk) to the current dollar amount of all tranches. *DTCH* is expressed in basis points or as a value between zero and 10,000.

(3) *Multifamily lender loss sharing risk relief percentages.* An Enterprise must have accurate information on each tranche's multifamily lender loss sharing risk relief percentage (*MF_LS%*) in the multifamily CRT. Lender loss sharing CRTs are multifamily CRTs where the lender and an Enterprise share all multifamily credit losses on a *pari passu* basis. For a given tranche, *MF_LS%* is the percentage of the tranche that is subject to lender loss sharing. *MF_LS%* is expressed as a value between zero and 100%.

(4) *Multiple tranche loss sharing percentage by tranche.* An Enterprise must have accurate information on each tranche's multiple tranche loss sharing risk relief percentage (*MF_MTLS%*) for the multifamily CRT. For a given tranche, *MF_MTLS%* is the percentage of the tranche that is either insured, reinsured, or afforded coverage

through lender reimbursement of credit losses of principal and is not part of lender loss sharing. $MF\_MTLS_{\%}$ is expressed as a value between zero and 100%.

(5) *Securitization risk relief percentage by tranche.* An Enterprise must have accurate information on each tranche's securitization risk relief percentage ($MF\_S_{\%}$) in the multifamily CRT. For a given tranche, MF$_S_{\%}$ is the percentage of the tranche sold in the capital markets. MF$_S_{\%}$ is expressed as a value between zero and 100%.

(6) *Credit risk capital on the underlying multifamily whole loans and guarantees.* The Enterprises must have accurate data on $PGCRC_{bps}$ for the multifamily CRT. $PGCRC_{bps}$ is calculated using the aggregate $NetCreditRiskCapReq_{bps}$ for all multifamily whole loans and guarantees underlying the given multifamily CRT.

(7) *CRT expected losses.* An Enterprise must have accurate data on total lifetime net expected credit risk losses ($PGEL_{bps}$) on the whole loans and guarantees underlying the multifamily CRT. $PGEL_{bps}$ shall be calculated internally by an Enterprise. $PGEL_{bps}$ does not include the operational risk capital requirement or going-concern buffer requirement. $PGEL_{bps}$ is expressed in basis points or as a value between zero and 10,000.

(8) *Counterparty collateral on lender and multiple tranche loss sharing transactions.* An Enterprise must have accurate data on the dollar amounts of $CntptyCollat_{\$}$ for each counterparty and by tranche in a multifamily CRT involving lender and multiple tranche loss sharing. For a given counterparty and tranche, $CntptyCollat_{\$}$ is the dollar amount of collateral to fulfill the counterparty's trust funding obligation. $CntptyCollat_{\$}$ is expressed in dollar terms as a value greater than or equal to zero.

(9) *Counterparty quota shares on lender and multiple tranche loss sharing transactions.* An Enterprise must have accurate information on counterparty quota shares on lender and multiple tranche loss sharing transactions for each counterparty by tranche. For a given counterparty and tranche, $CntptyShare_{\%}$ is the percentage of MF_$LS_{\%}$ or MF_$MTLS_{\%}$ that the given counterparty covers. $CntptyShare_{\%}$ is expressed as a value between zero and 100%.

(10) *Counterparty ratings on lender and multiple tranche loss sharing transactions.* An Enterprise must have internally generated ratings for the counterparties on lender and multiple tranche loss sharing transactions. An Enterprise should use the data inputs consistent with Table 2 to identify the *CPHaircut*. The internally generated ratings must be converted into the counterparty ratings provided in Table 3. The *CPHaircut* percentages for each counterparty rating provided in Table 3, are shown in Table 23.

Table 23: *CPHaircut* for Counterparty Rating on Lender and Multiple Tranche Loss Sharing Transactions

Counterparty Rating	*CPHaircut* for Concentration Risk: Not High	*CPHaircut* for Concentration Risk: High
1	2.1%	3.4%
2	5.3%	8.5%
3	6.0%	9.6%
4	12.7%	19.2%
5	16.2%	22.9%
6	22.5%	28.5%
7	41.2%	45.1%
8	48.2%	48.2%

(11) *Aggregate unpaid principal balance.* An Enterprise must have accurate information on each multifamily CRT's aggregate unpaid principal balance ($UPB_{\$}$).

(c) For each multifamily CRT, an Enterprise must use the parameters described in paragraph (b) of this section to calculate multifamily CRT capital relief using one of the three following methods:

(1) *Lender loss sharing*. The lender loss sharing capital relief formulae are as follows:

(i) An Enterprise must calculate the portion of capital associated with the lender's exposure (*LenderCapital*$_{\$}$) using the following formula:

$$LenderCapital_{\$} = (PGCRC_{bps}/10{,}000) * UPB_{\$} * \text{MF\_}LS_{\%}$$

(ii) An Enterprise must determine the uncollateralized counterparty exposure (*CntptyExposure*$_{\$}$), which is reduced by 50% if the Enterprise has the contractual right to receive future lender guarantee-fee revenue. *CntptyExposure*$_{\$}$ is calculated as follows:

$$CntptyExposure_{\$} = \max([LenderCapital_{\$} - CntptyCollat_{\$}], 0)$$

(iii) An Enterprise must determine counterparty credit risk in dollars (*CntptyCreditRisk*$_{\$}$). An Enterprise must use the following formula to calculate *CntptyCreditRisk*$_{\$}$:

$$CntptyCreditRisk_{\$} = CntptyExposure_{\$} * (CP\ Haircut)$$

(iv) An Enterprise must calculate total *CapRelief*$_{\$}$ for the entire multifamily CRT by adding up the capital relief in dollars and subtracting counterparty credit risk.

$$CapRelief_{\$} = LenderCapital_{\$} - CntptyCreditRisk_{\$}$$

(2) *Securitization*. The securitization multifamily capital relief formulae are as follows:

(i) An Enterprise must distribute $PGCRC_{bps}$ to the tranches of the multifamily CRT, while controlling for $PGEL_{bps}$. For a given tranche, $TCRC_{bps}$ is as follows:

$$TCRC_{bps} = (DTCH - ATCH) * \left[\max\left(0, \min\left(\left[\frac{PGCRC_{bps} + PGEL_{bps} - ATCH}{DTCH - ATCH}\right], 1\right)\right) - \max\left(0, \min\left(\left[\frac{PGEL_{bps} - ATCH}{DTCH - ATCH}\right], 1\right)\right)\right]$$

$TCRC_{bps}$ takes values between 0 and 10,000. $TCRC_{bps}$ must be calculated for each tranche in the multifamily CRT.

(ii) For each tranche in a multifamily CRT, an Enterprise must use the following formula to identify the capital relief from securitization ($STCRC_{bps}$):

$$STCRC_{bps} = MF\_S_{\%} * TCRC_{bps}$$

$STCRC_{bps}$ is expressed in basis points and takes values between 0 and 10,000.

(iii) An Enterprise must calculate total $CapRelief_{\$}$ for the entire multifamily CRT by adding up the capital relief in dollars across each tranche.

$$CapRelief_{\$} = \sum_{\forall Tranches \in CRT} \frac{(STCRC_{bps})}{10{,}000} * UPB_{\$}$$

(3) *Multiple tranche loss sharing*. The multiple tranche loss sharing multifamily capital relief formulae are as follows:

(i) An Enterprise must distribute $PGCRC_{bps}$ to the tranches of the multifamily CRT, while controlling for $PGEL_{bps}$. For a given tranche, $TCRC_{bps}$ is as follows:

$$TCRC_{bps} = (DTCH - ATCH) * \left[\max\left(0, \min\left(\left[\frac{PGCRC_{bps} + PGEL_{bps} - ATCH}{DTCH - ATCH}\right], 1\right)\right) - \max\left(0, \min\left(\left[\frac{PGEL_{bps} - ATCH}{DTCH - ATCH}\right], 1\right)\right)\right]$$

$TCRC_{bps}$ takes values between 0 and 10,000. $TCRC_{bps}$ must be calculated for each tranche in the multifamily CRT.

(ii) For each tranche in a multifamily CRT, an Enterprise must use the following formulae to identify the capital relief from multiple tranche loss sharing ($MTLSTCRC_{bps}$):

$$MTLSTCRC_{bps} = MF\_MTLS_{\%} * TCRC_{bps}$$

$MTLSTCRC_{bps}$ is expressed in basis points and takes values between 0 and 10,000.

(iii) An Enterprise must determine the uncollateralized counterparty exposure ($CntptyExposure_{bps}$) as follows:

$$CntptyExposure_{bps} = \max\left(\left[CntptyShare_{\%} * MTLSTCRC_{bps} - 10{,}000 * \frac{CntptyCollat_{\$}}{UPB_{\$}}\right], 0\right)$$

CntptyExposure$_{bps}$ takes values between 0 and 10,000. *CntptyExposure*$_{bps}$ is reduced by 50% if the Enterprise has the contractual right to receive future lender guarantee-fee revenue.

(iv) An Enterprise must determine counterparty credit risk (*CntptyCreditRisk*$_{bps}$), using the following formula to calculate *CntptyCreditRisk*$_{bps}$:

$$CntptyCreditRisk_{bps} = CntptyExposure_{bps} * (CP\ Haircut)$$

(v) An Enterprise must calculate total capital relief in dollars for the entire multiple tranche loss sharing multifamily CRT (*CapRelief*$_{\$}$) by adding up the capital relief in dollars across each tranche and subtracting counterparty credit risk.

$$CapRelief_{\$} = \sum_{\forall Tranches \in CRT} \frac{(MTLSTCRC_{bps})}{10{,}000} * UPB_{\$} - \sum_{\forall Tranches \in CRT} \frac{(CntptyCreditRisk_{bps})}{10{,}000} * UPB_{\$}$$

(d) *Total multifamily capital relief*. To calculate total capital relief across all multifamily CRTs (*TotalCapRelief*$_{\$\_MFWL}$), an Enterprise must aggregate capital relief using the following:

$$TotalCapRelief_{\$\_MFWL} = \sum_{\forall Multifamily\ CRTs} CapRelief_{\$\_CRT}$$

§ 1240.39 Multifamily whole loans market risk capital requirement.

(a) Each multifamily whole loan with market risk exposure is subject to the multifamily whole loan market risk capital requirement. There is no market risk exposure for multifamily guarantees. The market risk capital requirement for a multifamily whole loan is limited to spread risk.

(b) The multifamily whole loan market risk capital requirement is defined as the product of the market value, a defined spread shock of 15 bps and *SpreadDuration* derived from an Enterprise's internal models.

(c) The dollar amount of the $MarketRiskCapReq_{\$}$ for a multifamily whole loan is calculated as follows:

$MarketRiskCapReq_{\$}$ = Market Value x 0.0015 x *SpreadDuration*

(d) The aggregate market risk capital requirement for all multifamily whole loans and guarantees ($MarketRiskCapReq_{\$\_MFWL}$) is the sum of each loan's $MarketRiskCapReq_{\$}$:

$$MarketRiskCapReq_{\$\_MFWL} = \sum_{\forall MFWL} MarketRiskCapReq_{\$}$$

§ 1240.40 Multifamily securities market risk capital requirement.

(a) Each Enterprise and Ginnie Mae guaranteed multifamily MBS (*MFMBS*) in portfolio is subject to a market risk capital requirement. The market risk capital requirement for *MFMBS* is limited to spread risk.

(b) The *MFMBS* market risk capital requirement is defined as the product of the market value, a spread shock of 100 bps and the *SpreadDuration* derived from an Enterprise's internal models. The dollar amount of the $MarketRiskCapReq_{\$}$ for an *MFMBS* is calculated as follows:

$MarketRiskCapReq_{\$}$ = *MFMBS* Market Value x 0.0100 x *SpreadDuration*

(c) The aggregate market risk capital requirement for all *MFMBS* ($MarketRiskCapReq_{\$\_MFMBS}$) is the sum of each security's $MarketRiskCapReq_{\$}$:

$$MarketRiskCapReq_{\$\_MFMBS} = \sum_{\forall MFMBS} MarketRiskCapReq_{\$}$$

§ 1240.41 Operational risk capital requirement for multifamily whole loans and guarantees.

(a) Each multifamily whole loan and guarantee is subject to an 8 basis point operational risk capital requirement.

(b) The operational risk capital requirement in dollar terms (*OperationalRiskCapReq*$) is calculated as follows:

(1) If the Enterprise holds only credit risk or both credit and market risk, the calculation is as follows:

OperationalRiskCapReq$ = UPB x 0.0008

(2) Otherwise, if the Enterprise holds only market risk the calculation is as follows:

OperationalRiskCapReq$ = Market Value x 0.0008

(c) The aggregate operational risk capital requirement for all multifamily whole loans and guarantees (*OperationalRiskCapReq*$_{\_MFWL}$) is the sum of each loan's *OperationalRiskCapReq*$.

$$OperationalRiskCapReq_{\$\_MFWL} = \sum_{\forall MFWL} OperationalRiskCapReq_{\$}$$

§ 1240.42 Operational risk capital requirement for multifamily securities.

(a) Each MFMBS is subject to an 8 basis point operational risk capital requirement.

(b) The operational risk capital requirement for MFMBS in dollar terms (*OperationalRiskCapReq*$) is calculated as follows:

OperationalRiskCapReq$ = *MFMBS Market Value* x *0.0008*

(c) The aggregate operational risk capital requirement for MFMBS (*OperationalRiskCapReq$_MFMBS*) is the sum of each security's *OperationalRiskCapReq$*.

$$OperationalRiskCapReq_{\$\_MFMBS} = \sum_{\forall MFMBS} OperationalRiskCapReq_{\$}$$

§ 1240.43 Going-concern buffer requirement for multifamily whole loans and guarantees.

(a) Each multifamily whole loan and guarantee is subject to a 75 basis point going-concern buffer requirement (*GCBufferReq$*).

(b) The dollar amount of the *GCBufferReq$* is calculated as follows:

(1) If the Enterprise holds only credit risk or both credit and market risk, the calculation is as follows:

GCBufferReq$ = UPB x 0.0075

(2) Otherwise, if the Enterprise holds only market risk the calculation is as follows:

GCBufferReq$ = Market Value x 0.0075

(c) The aggregate going-concern buffer requirement for all multifamily whole loans and guarantees (*GCBufferReq$_MFWL*) is the sum of each loan's *GCBufferReq$*.

$$GCBufferReq_{\$\_MFWL} = \sum_{\forall MFWL} GCBufferReq_{\$}$$

§ 1240.44 Going-concern buffer requirement for multifamily securities.

(a) Each MFMBS is subject to a 75 basis point going-concern buffer requirement.

(b) The going-concern buffer requirement for MFMBS in dollar terms (*GCBufferReq$*) is calculated as follows:

GCBufferReq$ = MFMBS Market Value x *0.0075*

(c) The aggregate going-concern buffer requirement for all MFMBS (*GCBufferReq$_MFMBS*) is the sum of each security's *GCBufferReq$*.

$$GCBufferReq_{\$\_MFMBS} = \sum_{\forall MFMBS} GCBufferReq_{\$}$$

§ 1240.45 Aggregate risk-based capital requirement for multifamily whole loans, guarantees, and related securities.

The aggregate capital requirement for multifamily whole loans, guarantees and related securities is the cumulative total of: the aggregate net credit risk capital requirement; the aggregate market risk capital requirement; the aggregate operational risk capital requirement; the aggregate going-concern buffer requirement; net of the total capital relief from multifamily CRTs. The aggregate risk-based capital requirement for multifamily whole loans and guarantees (*RiskBasedCapReq$_MFWLGS*) is calculated as follows:

$$RiskBasedCapReq_{\$\_MFWLGS} = NetCreditRiskCapReq_{\$\_MFWL} + MarketRiskCapReq_{\$\_MFWL} + MarketRiskCapReq_{\$\_MFMBS} + OperationalRiskCapReq_{\$\_MFWL} + OperationalRiskCapReq_{\$\_MFMBS} + GCBufferReq_{\$\_MFWL} + GCBufferReq_{\$\_MFMBS} - TotalCapRelief_{\$\_MFWL}$$

§ 1240.46 Non-Enterprise and non-Ginnie Mae CMBS risk-based capital requirement.

(a) The risk-based capital requirement for a CMBS is the cumulative total of: a combined credit risk and market risk capital requirement, an operational risk capital requirement, and a going-concern buffer requirement.

(b) A CMBS is subject to 200 basis point combined credit and market risk capital requirement. The combined credit and market risk capital requirement for a CMBS in dollar terms (*CreditAndMarketRiskCapReq$*) is calculated as follows:

CreditAndMarketRiskCapReq$ = CMBS Market Value x *0.0200*

(c) The aggregate combined credit and market risk capital requirement for CMBS (*CreditAndMarketRiskCapReq$_CMBS*) is the sum of each security's *CreditAndMarketRiskCapReq$* as follows:

$$CreditAndMarketRiskCapReq_{\$\_CMBS} = \sum_{\forall CMBS} CreditAndMarketRiskCapReq\$$$

(d) A CMBS is subject to an 8 basis point operational risk capital requirement. The operational risk capital requirement for CMBS in dollar terms (*OperationalRiskCapReq$*) is calculated as follows:

OperationalRiskCapReq$ = CMBS Market Value x *0.0008*

(e) The aggregate operational risk capital requirement for CMBS (*OperationalRiskCapReq$_CMBS*) is the sum of each loan's *OperationalRiskCapReq$*.

$$OperationalRiskCapReq_{\$\_CMBS} = \sum_{\forall CMBS} OperationalRiskCapReq_{\$}$$

(f) A CMBS is subject to a 75 basis point going-concern buffer requirement. The going-concern buffer requirement for CMBS in dollar terms (*GCBufferReq$*) is calculated as follows:

GCBufferReq$ = CMBS Market Value x *0.0075*

The aggregate going-concern buffer requirement for all CMBS (*GCBufferReq$_CMBS*) is the sum of each security's *GCBufferReq$*.

$$GCBufferReq_{\$\_CMBS} = \sum_{\forall CMBS} GCBufferReq_{\$}$$

(g) The total risk-based capital requirement for CMBS in dollar terms (*RiskBasedCap$_{_CMBS}$*) is calculated as follows:

$$RiskBasedCapReq_{\$\_CMBS} = CapitalAndMarketRiskCapReq_{\$\_CMBS} +$$

$$OperationalRiskCapReq_{\$\_CMBS} + GCBufferReq_{\$\_CMBS}$$

§ 1240.47 Other assets and exposures risk-based capital requirement.

(a) *Deferred Tax Assets (DTA).* DTA are assets on the balance sheet that may be used to reduce taxable income. For purpose of this section, adjusted core capital is core capital less DTA that arise from net operating losses and tax credit carryforwards, net of any related valuation allowances and net of deferred tax liabilities (DTL). The risk-based capital requirement for DTA is calculated as follows:

RiskBasedCapReq$_{_DTA}$ =

100 percent of DTA that arise from net operating losses and tax credit carryforwards, net of any related valuation allowances and net DTL

+ 100 percent of DTA arising from temporary differences that could not be realized through net operating loss carrybacks, net of related valuation allowances and net of DTL, that exceed 10 percent of adjusted core capital

+ 20 percent of DTA arising from temporary differences that could not be realized through net operating loss carrybacks, net of related valuation allowances and net of DTL, that do not exceed 10 percent of adjusted core capital

+ 8 percent of DTA arising from temporary differences that could be realized through net operating loss carrybacks, net of related valuation allowances and net of DTL.

(b) *Municipal Debt*. A Municipal Debt instrument is an obligation issued by a state, a local government, or a state agency such as a housing finance agency. The risk-based capital requirement for Municipal Debt is the cumulative total of a market risk capital requirement; an operational risk capital requirement; and a going-concern buffer requirement. There is no credit risk capital requirement for Municipal Debt.

(1) A Municipal Debt instrument is subject to a 760 basis point market risk capital requirement. The market risk capital requirement for a Municipal Debt instrument in dollar terms (*MarketRiskCapReq*$_{\$}$) is calculated as follows:

$$MarketRiskCapReq_{\$} = \textit{Municipal Debt Market Value} \times 0.076$$

The aggregate market risk capital requirement for all Municipal Debt (*MarketRiskCapReq*$_{\$\_MD}$) is the sum of each instrument's *MarketRiskCapReq*$_{\$}$:

$$MarketRiskCapReq_{\$\_MD} = \sum_{\forall MD} MarketRiskCapReq_{\$}$$

(2) Municipal debt is subject to an 8 basis point operational risk capital requirement. The operational risk capital requirement for municipal debt in dollar terms (*OperationalRiskCapReq*$_{\$}$) is calculated as follows:

$$OperationalRiskCapReq_{\$} = \textit{Municipal Debt Market Value} \times 0.0008$$

The aggregate operational risk capital requirement for municipal debt (*OperationalRiskCapReq*$_{\$\_MD}$) is the sum of each instrument's *OperationalRiskCapReq*$_{\$}$.

$$OperationalRiskCapReq_{\$\_MD} = \sum_{\forall MD} OperationalRiskCapReq_{\$}$$

(3) Municipal debt is subject to a 75 basis point going-concern buffer requirement. The going-concern buffer requirement for municipal debt in dollar terms (*GCBufferReq*$_{\$\_MD}$) is calculated as follows:

GCBufferReq$_{\$}$ = *Municipal Debt Market Value* x *0.0075*

The aggregate going-concern buffer requirement for all municipal debt (*GCBufferReq*$_{\$\_MD}$) is the sum of each security's *GCBufferReq*$_{\$}$.

$$GCBufferReq_{\$\_MD} = \sum_{\forall MD} GCBufferReq_{\$}$$

(4) The total risk-based capital requirement for municipal debt in dollar terms (*RiskBasedCap*$_{\$\_MD}$) is calculated as follows:

RiskBasedCapReq$_{\$\_MD}$ = *MarketRiskCapReq*$_{\$\_MD}$ + *OperationalRiskCapReq*$_{\$\_MD}$ + *GCBufferReq*$_{\$\_MD}$

(c) *Cash and Cash Equivalents*. Cash and cash equivalents are highly liquid investment securities that have a maturity at the date of acquisition of three months or less and are readily convertible to known amounts of cash. Cash and cash equivalents are not subject to credit risk, market risk, or operational risk capital requirements, nor is there a going-concern buffer requirement for cash and cash equivalents. The total risk-based capital requirement for cash and cash equivalent assets is zero.

(d) *Reverse Mortgage Loans and Securities*. The capital requirement for Reverse Mortgage Loans and Securities is the cumulative total of: a market risk capital requirement, an operational risk capital requirement, and a going-concern buffer requirement.

(1) The dollar amount of the *MarketRiskCapReq$* for a reverse mortgage loan is calculated as follows:

MarketRiskCapReq$ = Market Value x 0.05

(2) The dollar amount of the *MarketRiskCapReq$* for a reverse mortgage security is calculated as follows:

MarketRiskCapReq$ = Market Value x 0.0410

(3) The aggregate market risk capital requirement for all reverse mortgage loans and securities (*MarketRiskCapReq$_SFREV*) is the sum of each loan's and security's *MarketRiskCapReq$*:

$$MarketRiskCapReq_{\$\_SFREV} = \sum_{\forall SFREV} MarketRiskCapReq_{\$}$$

(4) Reverse mortgage loans and securities are subject to an 8 basis point operational risk capital requirement. The operational risk capital requirement for reverse mortgage loans and securities in dollar terms (*OperationalRiskCapReq$*) is calculated as follows:

OperationalRiskCapReq$ = Market Value x *0.0008*

The aggregate operational risk capital requirement for reverse mortgage loans and securities (*OperationalRiskCapReq$_SFREV*) is the sum of each loan's and security's *OperationalRiskCapReq$*.

$$OperationalRiskCapReq_{\$\_SFREV} = \sum_{\forall SFREV} OperationalRiskCapReq_{\$}$$

(5) Reverse mortgage loans and securities are subject to a 75 basis point going-concern buffer requirement. The going-concern buffer requirement for reverse mortgage loans and securities in dollar terms (*GCBufferReq$*) is calculated as follows:

GCBufferReq$ = Market Value x *0.0075*

The aggregate going-concern buffer requirement for all reverse mortgage loans and securities (*GCBufferReq$_SFREV*) is the sum of each loan's and security's *GCBufferReq$*.

$$GCBufferReq_{\$\_SFREV} = \sum_{\forall SFREV} GCBufferReq_{\$}$$

(6) The total risk-based capital requirement for reverse mortgage loans and securities in dollar terms (*RiskBasedCap$_SFREV*) is calculated as follows:

RiskBasedCapReq$_SFREV = *CapitalAndMarketRiskCapReq$_SFREV* +

OperationalRiskCapReq$_SFREV + *GCBufferReq$_SFREV*

(e) *Single-family Rentals:* Single-family rentals are multiple income-producing single-family units owned by an investor for the purpose of renting them and deriving a profit from their operation. Single-family Rentals shall be treated as multifamily whole loans and guarantees for the purposes of assigning risk-based capital.

§ 1240.48 Unassigned Activities.

(a) For purposes of this part, an Unassigned Activity means any asset, guarantee, off-balance sheet guarantee, or activity for which this part does not have an explicit risk-based capital treatment. An Unassigned Activity must be assigned a capital requirement.

(b) The Director has the authority under 12 U.S.C. 4612(e) to treat as an Unassigned Activity any asset, guarantee, off-balance sheet guarantee or activity that exists as of the effective date of this part, or is not in existence as of the effective date of this part, which has:

(1) characteristics or unusual features that create risks for an Enterprise that are not adequately reflected in the specified treatments in this part; or

(2) for which the specified treatment in this part no longer adequately reflects the risks to an Enterprise, either because of increased volume or because new information concerning those risks has become available.

(c) The methodology for determining the capital requirement for an Unassigned Activity includes the following steps:

(1) An Enterprise must provide a notification to FHFA of a proposal related to an Unassigned Activity as soon as possible, but in no event later than thirty days after the date on which the transaction closes or is settled. This obligation applies with respect to any activity for which this part does not otherwise specifically prescribe a risk-based capital requirement, or that FHFA has notified the Enterprise is an Unassigned Activity. The notification must include:

(i) a proposal for an appropriate capital treatment that will capture the credit and market risk of the Unassigned Activity; and

(ii) narrative and data to explain the Unassigned Activity sufficient for FHFA to understand the risk profile of the Unassigned Activity.

(2) FHFA will review the notification and determine whether an existing treatment specified in this part captures the risks of the Unassigned Activity. If FHFA determines there is no effective existing treatment, FHFA will determine an appropriate treatment. FHFA will provide an Enterprise with an order specifying the risk-based capital treatment for the Unassigned Activity. If FHFA does not provide an Enterprise with an order specifying the risk-based capital treatment for the Unassigned Activity in time for the Enterprise to prepare its capital report, an Enterprise shall use its own proposed capital treatment, reflecting its assessment of the capital required in light of the

various risks the activity presents, including an operational risk capital requirement and a going-concern buffer requirement.

(d) This part may be amended from time to time to provide for a risk-based capital requirement treatment for a specified Unassigned Activity.

§ 1240.49 Aggregate risk-based capital requirement calculation.

The calculation for the aggregate risk-based capital requirements for total capital (*RiskBasedCapReq*$_{\$\_TOTAL}$), as described in § 1240.4 of this part, is as follows:

$$RiskBasedCapReq_{\$\_TOTAL} = RiskBasedCapReq_{\$\_SFWLGS} + RiskBasedCapReq_{\$\_PLS} + RiskBasedCapReq_{\$\_MFWLGS} + RiskBasedCapReq_{\$\_CMBS} + RiskBasedCapReq_{\$\_DTA} + RiskBasedCapReq_{\$\_MD} + RiskBasedCapReq_{\$\_SFREV}$$

RiskBasedCapReq$_{\$\_TOTAL}$ shall also include any capital requirements for Unassigned Activities.

§ 1240.50 Minimum leverage capital requirement: 2.5 percent alternative.

Each Enterprise shall maintain at all times core capital in an amount at least equal to 2.5 percent of total assets and off-balance sheet guarantees related to securitization activities, or such higher amount as the Director may require pursuant to part 1225 of this chapter.

§ 1240.51 Minimum leverage capital requirement: Bifurcated alternative.

Each Enterprise shall maintain at all times core capital in an amount at least equal to 4% of non-trust assets and 1.5% of trust assets, or such higher amount as the Director may require pursuant to part 1225 of this chapter.

CHAPTER XVII—OFFICE OF FEDERAL HOUSING ENTERPRISE OVERSIGHT, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

SUBCHAPTER C—SAFETY AND SOUNDNESS

3. Remove part 1750.

/s/ June 12, 2018

Melvin L. Watt, Date

Director, Federal Housing Finance Agency.