



CREDIT RISK TRANSFER PROGRESS REPORT

Second Quarter 2018

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Overview of the Single-Family CRT Program

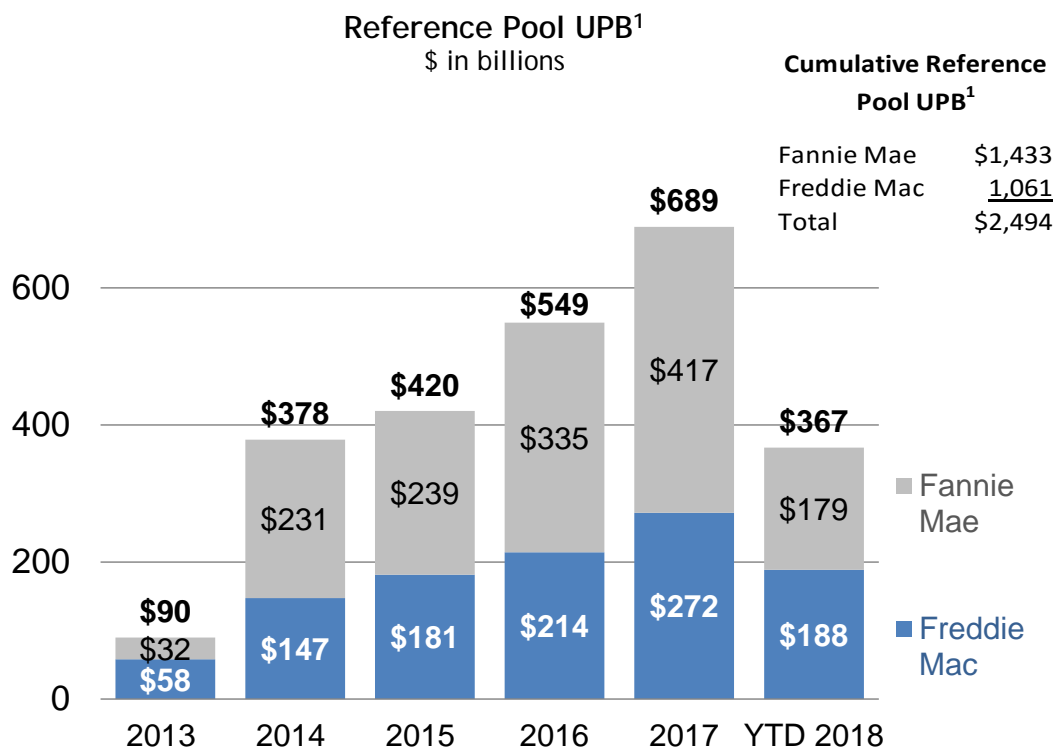
In 2012 the Federal Housing Finance Agency (FHFA) established guidelines governing single-family credit risk sharing by Fannie Mae and Freddie Mac (the Enterprises) with the intent of reducing their overall risk and, therefore, the risk they pose to taxpayers while they are in conservatorship. Fannie Mae and Freddie Mac started to implement their credit risk transfer (CRT) programs in 2013 and now transfer to private investors a substantial amount of the credit risk of new acquisitions the Enterprises assume for loans in targeted loan categories. Targeted loan categories are single-family fixed-rate mortgages with loan-to-value ratios (LTVs) greater than 60 percent and original term greater than 20 years. (HARP/Freddie Mac Relief Refinance/Fannie Mae Refi Plus loans are excluded and other minimal exclusions apply.)

The single-family CRT programs include credit risk transfers using debt issuances, insurance/reinsurance transactions, senior-subordinate securitizations, and a variety of lender collateralized recourse transactions. As outlined in the annual Conservatorship Scorecard, the Enterprises continue to innovate and experiment with different structures and attempt to expand the scope of their CRT programs as part of their efforts to further reduce credit risk where economically sensible.

For a description of Single-Family Credit Risk Transfer Structures, see Appendix A.

From the beginning of the Enterprises' Single-Family CRT programs in 2013 through the end of June 2018, Fannie Mae and Freddie Mac have transferred a portion of credit risk on \$2.5 trillion of unpaid principal balance (UPB), with a combined Risk in Force (RIF) of about \$81 billion, or 3.2 percent of UPB. An additional \$1.1 trillion of UPB and \$278 billion of RIF has been transferred to primary mortgage insurers from 2013 through the end of June 2018 as described on page 10. Through CRT and mortgage insurance, the majority of the underlying mortgage credit risk on mortgages targeted for CRT has been transferred to private investors.

Enterprise Single-Family Mortgage CRT Activity, 2013 - 2Q18



¹ The UPB shown in the table is 100 percent of each associated reference pool at issuance.



First Half of 2018 Single-Family CRT Activity

In the first half of 2018, the Enterprises transferred risk on \$367 billion of UPB with a total RIF of \$12 billion. Debt issuances accounted for 61 percent of RIF, reinsurance transactions accounted for 30 percent of RIF, lender risk sharing accounted for 6 percent of RIF, and senior/subordinate transactions accounted for 3 percent of RIF.

Single-Family Credit Risk Transfer Volume, First Half of 2018
\$ in millions

	Fannie Mae			Freddie Mac			Total		
	Reference Pool UPB ¹	RIF	Percent of Total RIF	Reference Pool UPB ¹	RIF	Percent of Total RIF	Reference Pool UPB ¹	RIF	Percent of Total RIF
Debt Issuances ²	102,570	3,551	60%	153,264	3,815	61%	255,834	7,366	61%
Insurance/Reinsurance ³	56,005	1,654	28%	22,877	1,953	31%	78,883	3,607	30%
Lender Risk Sharing	19,970	702	12%	2,244	71	1%	22,214	773	6%
Senior/Subordinate ⁴	-	-		10,087	383	6%	10,087	383	3%
Total	178,545	5,907		188,472	6,221		367,019	12,129	

¹ The UPB shown in the table is 100 percent of the associated reference pool UPB at issuance.

² For Freddie Mac, the same reference pool UPB backs STACR and ACIS transactions. For Fannie Mae, CAS and CIRT are backed by separate reference pools.

³ ACIS transactions listed under Insurance/Reinsurance are not associated with STACR deals.

⁴ Senior/Subordinate includes STACR-SPI transactions. For STACR-SPI transactions, the Reference Pool UPB represents the PCs issued by the PC Trust and the Risk-in-Force represents the sold portion of the non-guaranteed securities issued by the SPI Trust.



Fannie Mae Single-Family CRT Transactions

In the first half of 2018, Fannie Mae transferred risk on \$179 billion of UPB, with a total RIF of \$5.9 billion. Debt issuances (CAS) accounted for 60 percent of total RIF of CRT issuances.

Deal Type	Deal Name ¹	Date	Reference Pool UPB ² (in millions of \$)	Risk transfer attach/detach points (in basis points)	Credit Protection	
					Sold portion of tranches: Bond proceeds ³ or RIF (in millions of \$)	Enterprise Retained Portion ⁴ (in millions of \$)
Credit Risk Debt Issuance						
CAS	2018-C01	02/14/18	44,934	50/400	1,494	303
CAS	2018-C02	03/14/18	26,501	50/450	1,007	186
CAS	2018-C03	05/09/18	31,135	50/405	1,050	211
Insurance/Reinsurance						
CIRT	2018-1	02/01/18	16,876	50/325	464	84
CIRT	FE 2018-1 ⁵	03/01/18	4,000	50/375	130	20
CIRT	FE 2018-2 ⁵	03/01/18	2,667	50/375	87	13
CIRT	2018-2	04/01/18	9,031	50/350	271	45
CIRT	2018-3	04/01/18	1,333	50/350	40	7
CIRT	2018-4	06/01/18	19,348	60/360	580	116
CIRT	2018-5	06/01/18	2,750	60/360	82	16
Lender Risk Sharing ⁵			19,970		702	
Senior/Subordinate						
Total YTD 2018			178,545		5,907	1,002

¹ Deal names denoted with a (1) contain low LTV pools (between 60.01% and 80.00%), and deal names denoted with a (2) contain high LTV pools (between 80.01% and 97.00%).

² The UPB shown in the table is 100 percent of the associated reference pool at issuance.

³ Proceeds from debt issuances will differ from face value when issued at a discount or premium.

⁴ Enterprise Retained Portion represents the amount of risk retained during the term of the CRT transaction by the Enterprises, excluding senior tranches.

⁵ Table reflects the portion committed in 2018 and does not reflect the full commitment amount.



Fannie Mae Cumulative Single-Family Risk In Force

From 2013 through the end of June 2018, Fannie Mae transferred risk on approximately \$1.4 trillion of UPB, with a total RIF of \$42.5 billion, or 3.0 percent of UPB. Debt issuances (CAS) accounted for 75 percent of total RIF of CRT issuances.

Fannie Mae Cumulative Single-Family Risk in Force

Deal Type	Reference Pool UPB ¹ (in millions of \$)	Sold portion of tranches: Bond proceeds ² or RIF (in millions of \$)	Percent of Total RIF
Credit Risk Debt Issuance	1,044,581	32,024	75%
Insurance/Reinsurance	285,300	7,092	17%
Lender Risk Sharing	102,879	3,356	8%
Senior/Subordinate	-	-	
Total	1,432,760	42,472	100%

¹The UPB shown in the table is 100 percent of the associated reference pool at issuance.

²Proceeds from debt issuances will differ from face value when issued at a discount or premium.



Freddie Mac Single-Family CRT Transactions

In the first half of 2018, Freddie Mac transferred risk on \$188 billion of UPB with a total RIF of \$6.2 billion. Debt issuances (STACR) accounted for 61 percent of total RIF of CRT transactions.

Deal Type	Deal Name ¹	Date	Reference Pool UPB ² (in millions of \$)	Risk transfer attach/detach points (in basis points)	Credit Protection		Enterprise Retained Portion ⁴ (in millions of \$)
					Sold portion of tranches: Bond proceeds ³ or RIF (in millions of \$)	Insured via ACIS (in millions of \$)	
Credit Risk Debt Issuance ⁵							
STACR	2018-DNA1	01/30/18	34,733	50/400	900	255	234
STACR	2018-HQA1	03/28/18	40,102	50/400	985	348	271
STACR	2017-HRP1 ^{6,7}	12/13/17		75/375		285	40
STACR	2018-DNA2	06/20/18	49,346	50/350	1,050	356	321
STACR	2018-HRP1 ⁷	05/21/18	29,083	0/425	880	294	135
Insurance/Reinsurance ⁸							
ACIS	2017-AFRM-1 ¹⁰	07/01/17	3,730	50/375		115	25
ACIS	2018-SAP1	04/04/18	19,147	30/195		300	57
Lender Risk Sharing ^{9, 10}			2,244		71		
Senior/Subordinate		Total YTD 2018	10,087		383		
Total YTD 2018			188,472		4,268	1,953	1,083

¹ Deal names denoted with a DNA contain low LTV pools (between 60.01% and 80.00%), and deal names denoted with a HQA contain high LTV pools (between 80.01% and 97.00%).

² The UPB shown in the table is 100 percent of the associated reference pool at issuance.

³ Proceeds from debt issuances will differ from face value when issued at a discount or premium.

⁴ Enterprise Retained Portion represents the amount of risk retained during the term of the CRT transaction by the Enterprises, excluding senior tranches.

⁵ The same reference pool UPB backs STACR and ACIS transactions.

⁶ Reference Pool UPB and Bond Proceeds are reflected in the 4Q17 Credit Risk Transfer Progress Report as the STACR transaction occurred in 2017. The ACIS transaction occurred in 2018 and only the amount insured via ACIS is reflected in the table above.

⁷ In 2017, Freddie Mac expanded its STACR program to a new series of STACR debt notes, called SHRP. SHRP notes are backed by loans that meet the HARP eligibility criteria and have mark-to-market LTVs between 60 and 150 percent, allowing Freddie Mac to transfer risk on some of its most seasoned loans. HARP loans are excluded from CRT targeted loans.

⁸ ACIS transactions listed under Insurance/Reinsurance are not associated with STACR deals.

⁹ For reporting purposes, amounts are recorded under STACR.

¹⁰ Table reflects the portion committed in 2018 and does not reflect the full commitment amount.



Freddie Mac Cumulative Single-Family Risk In Force

From 2013 through the end of June 2018, Freddie Mac transferred risk on approximately \$1.1 trillion of UPB, with a total RIF of \$39 billion, or 3.7 percent of UPB. Debt issuances (STACR) accounted for 71 percent of total RIF of CRT issuances.

Freddie Mac Cumulative Single-Family Risk in Force

Deal Type	Reference Pool UPB ¹ (in millions of \$)	Sold portion of tranches: Bond proceeds ² or RIF (in millions of \$)	Percent of Total RIF
Credit Risk Debt Issuance ³	969,787	27,705	71%
Insurance/Reinsurance ⁴	72,510	10,545	27%
Lender Risk Sharing	4,486	98	0%
Senior/Subordinate	14,243	612	2%
Total	1,061,026	38,959	100%

¹ The UPB shown in the table is 100 percent of the associated reference pool at issuance.

² Proceeds from debt issuances will differ from face value when issued at a discount or premium.

³ The same reference pool UPB backs STACR and ACIS transactions.

⁴ ACIS transactions listed under Insurance/Reinsurance are not associated with STACR deals.

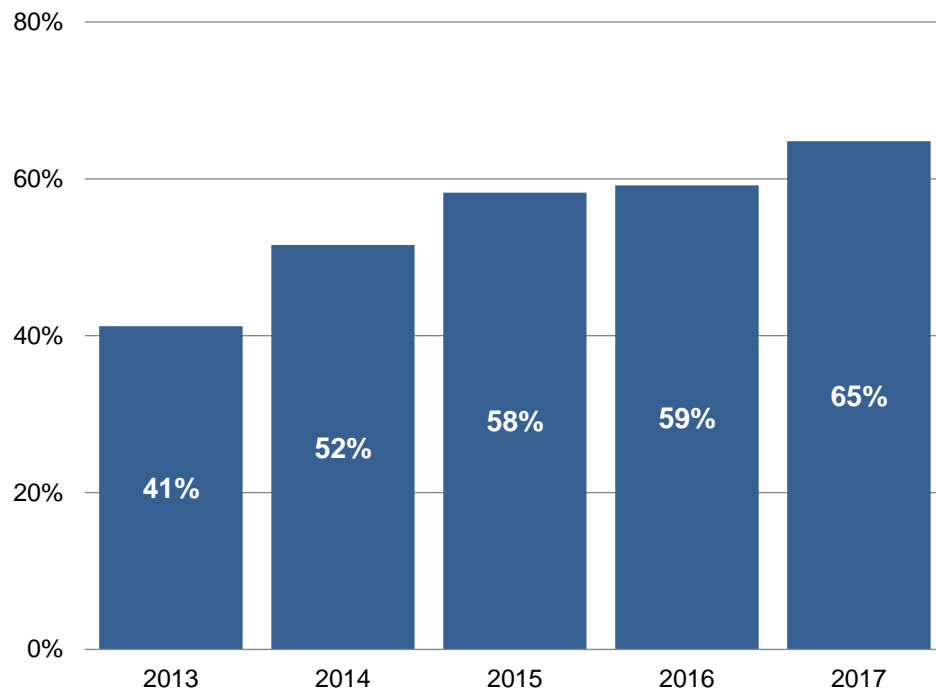


Single-Family CRT 2018 Conservatorship Scorecard Objective

For 2018, FHFA established a Scorecard objective for the Enterprises to transfer a meaningful portion of credit risk on at least 90 percent of the UPB of their acquisitions of single-family loans targeted for credit risk transfer (CRT) by the end of 2018. Targeted loan categories are single-family fixed-rate mortgages with LTVs greater than 60 percent and original term greater than 20 years.

In 2017, loans targeted for credit risk transfers represented 65 percent of the Enterprises' single-family loan production.

Enterprises' Combined Single-Family Loans Targeted for CRT
(as a Percent of Total Acquisitions)



Single-Family CRT 2018 Conservatorship Scorecard Metrics

Through the first half of 2018, the Enterprises transferred 77 percent of the credit risk on 85 percent of the UPB of targeted single-family new acquisitions.

Single-Family CRT 2018 Conservatorship Scorecard Metrics¹

(\$s in billions)	Fannie Mae	Freddie Mac
UPB of Newly Acquired Mortgages ²	\$502	\$343
UPB of Targeted Mortgage Acquisitions ²	\$323	\$225
Single-Family Loans Targeted for CRT ²	64%	66%
Targeted UPB Covered in CRT	\$281	\$185
Percent of Targeted UPB Covered by CRTs	87%	82%
Pre-CRT Credit Risk Capital	\$5.2	\$4.1
Credit Risk Capital Reduction	\$4.0	\$3.1
Credit Risk Transferred Through CRT ³	77%	76%

¹ Through June 30, 2018

² Mortgages acquired in 2017. (HARP/Freddie Mac Relief Refinance/Fannie Mae Refi Plus loans are excluded and other minimal exclusions apply. Loans with terms less than or equal to 20-years or with LTVs of less than or equal to 60 percent are also excluded.)

³ Credit risk transferred is defined as the amount of credit risk capital transferred on 2017 acquisitions that have been included in CRT transactions in 2017 or 2018 divided by pre-CRT credit risk capital per the Conservatorship Capital Framework (excluding any buffers) of 2017 target acquisitions that have been included in CRT transactions that settled in 2017 or 2018.



Estimated Market-Implied versus Average Single-Family Guarantee Fees for Fannie Mae and Freddie Mac

The implied guarantee fee from market prices in the first half of 2018 ranged between 39 to 65 bps for CAS and STACR transactions, compared to the Enterprises' average guarantee fee of 57 bps in 2016.

Single-Family Guarantee Fees Implied by CRT Bond Pricing¹ (in bps)

	Fannie Mae CAS			Freddie Mac STACR			
	2018 C01	2018 C02	2018 C03	2018 DNA-1	2018 HQA-1	2018 HRP-1	2018 DNA-2
Non-credit Costs	25.0	35.0	25.0	25.0	35.0	33.9 ²	25.0
Market Implied Credit Costs	15.2	16.8	15.7	13.7	16.7	31.0	14.3
Market Implied Guarantee Fee	40.2	51.8	40.7	38.7	51.7	64.9	39.3



¹ See Appendix C for additional details.

² The 2018 HRP-1 transaction included high LTV and low LTV loans. The non-credit costs reflect a weighted average of the DNA and HQA non-credit costs.

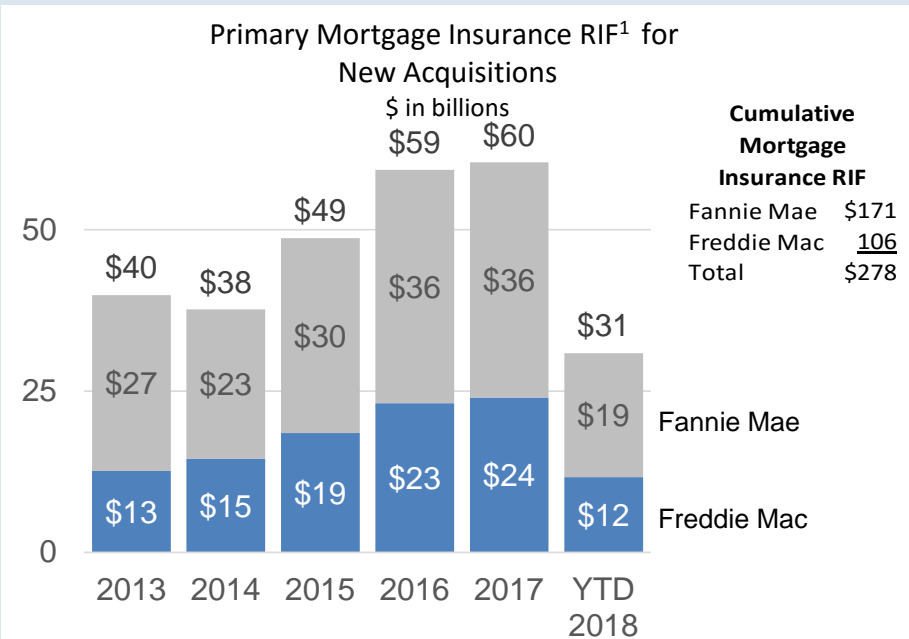
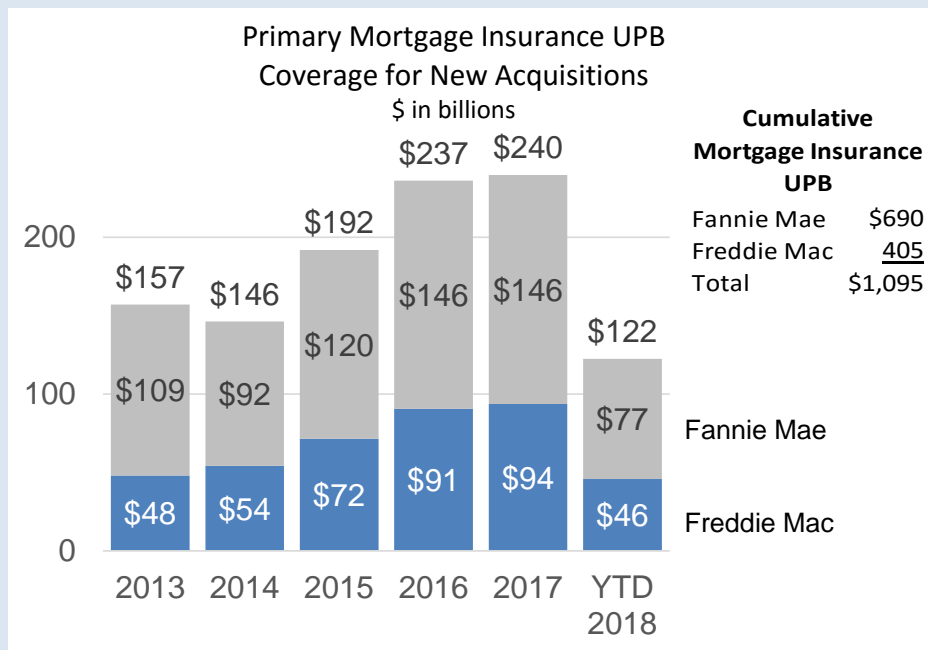
The Role of Primary Mortgage Insurance in Single-Family CRT Transactions

From the beginning of Fannie Mae and Freddie Mac's CRT programs in 2013 through the end of June 2018, the Enterprises have transferred a portion of credit risk on approximately \$2.5 trillion in single-family loans through CRT. During the same period, a portion of an additional \$1.1 trillion of credit risk has been transferred to primary mortgage insurers.

Single-family loans with LTVs above 80 percent are required to have loan-level credit enhancement in one of the following charter-eligible forms:

- Private mortgage insurance (PMI),
- Seller agreement to repurchase or replace the mortgage, or
- Seller retained participation in the loan.

PMI is the form of credit enhancement used most often. The charts below show the total UPB and RIF (measured at the time of Enterprise acquisition for each loan) of single-family loans with PMI acquired by the Enterprises between 2013 and June 2018. When losses occur on loans with LTVs above 80 percent, private mortgage insurers provide credit loss coverage before credit risk transfer investors or the Enterprises. However, it should be noted that the Enterprise, not the CRT investor, is typically responsible for counterparty risk when PMI coverage is provided. Therefore, if the private mortgage insurer is not able to make the payment necessary to fulfill its credit loss coverage obligations, the Enterprise must step in and cover those losses, not the CRT investor.



¹ While the total RIF associated with primary mortgage insurance is large, the actual level of credit risk sharing provided through paid insurance claims depends on the number of insured loans that default and the severity of losses on those loans. These figures assume that all PMI payments would be made by the mortgage insurer, not by Fannie Mae or Freddie Mac.

Overview of the Multifamily CRT Program

The Enterprises have long established credit risk transfer programs for their multifamily businesses. Risk sharing with the private sector is an integral part of the multifamily business models of both Enterprises. Freddie Mac's program focuses on senior/subordinate structures via capital market transactions. Fannie Mae's program focuses on pro-rata risk sharing directly with lenders. Both Enterprises are also working to develop programs similar to single-family transaction structures focusing on credit risk debt issuances and insurance/reinsurance.

Multifamily Credit Risk Transfer Transaction Structures

Risk Sharing Transactions: In Fannie Mae's multifamily program (known as Delegated Underwriting and Servicing program or DUS), Fannie Mae approved lenders underwrite and service loans based on Fannie Mae's underwriting criteria, which enables Fannie Mae to purchase or guarantee the loans without performing the underwriting. The lenders typically share in loan level credit losses in two ways: (1) lenders share up to one-third of the losses on a pro-rata basis or (2) lenders bear losses up to the first 5 percent of the unpaid principal balance of the loan and share in remaining losses up to a prescribed limit. By design, the DUS program loss sharing aligns lenders and Fannie Mae to maximize loan performance over the life of the loans. To minimize counterparty risk associated with lender risk-sharing, Fannie Mae requires DUS lenders to be

financially strong with extensive underwriting and servicing experience. Additionally, DUS lenders must post collateral and maintain certain financial requirements when participating in risk-sharing with Fannie Mae.

Securitization with Subordination Transactions: Freddie Mac issues senior/subordinate notes to finance most of its multifamily originations, primarily through its K-deal structure. In these transactions, Freddie Mac sells a pool of mortgage loans into a third-party trust. The trust issues subordinate and senior bonds that are tied to the performance of the pool of mortgage loans. Payments to bond investors come from the mortgage loan pool cash flows. Freddie Mac acquires the senior bonds and sells pass-through certificates (K Certificates) backed by the senior bonds. Freddie Mac guarantees the senior K Certificates. The trust sells the non-guaranteed subordinate bonds directly to investors. Virtually all credit risk associated with the pool of mortgage loans is transferred to investors through the subordinated bonds, which are structured to absorb expected and unexpected credit losses.



Multifamily CRT 2018 Conservatorship Scorecard Objective

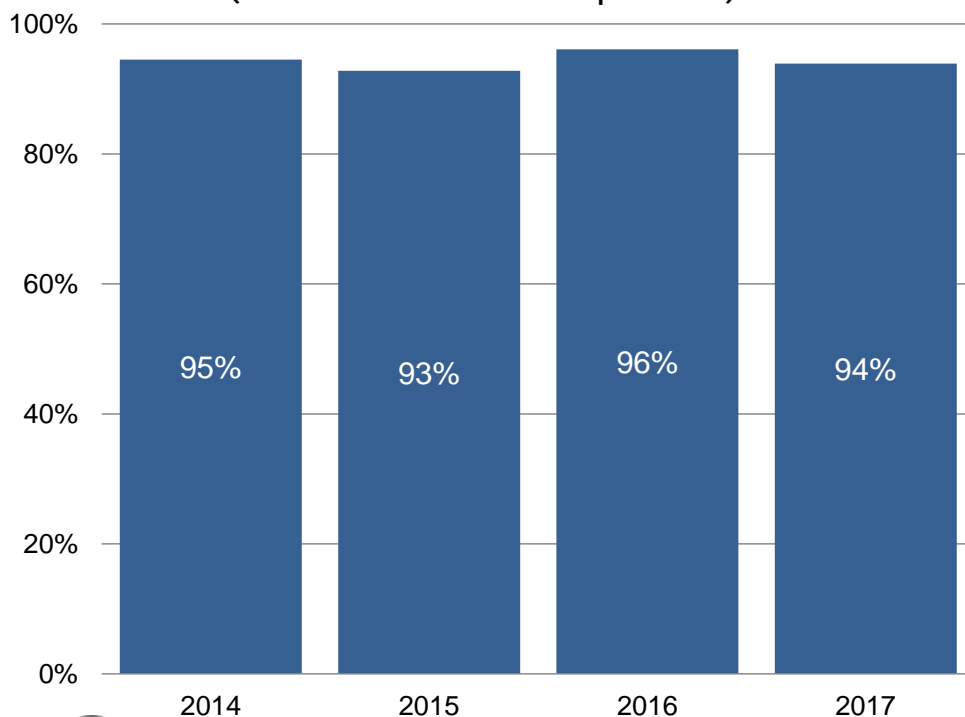
For 2018, FHFA established a Scorecard objective for the Enterprises to transfer a meaningful portion of the credit risk on newly acquired mortgages, subject to FHFA target adjustments as may be necessary to reflect market conditions and economic considerations

Multifamily CRT 2018 Conservatorship Scorecard Metrics

The Enterprises have transferred the credit risk on 94 percent of multifamily loan acquisitions², as measured by unpaid principal balance.

Through the first half of 2018, Fannie Mae and Freddie Mac transferred 28 percent and 86 percent, respectively, of the multifamily credit risk through CRTs.

Enterprises' Combined Multifamily Acquisitions Covered by CRT
(as a Percent of Total Acquisitions)



Multifamily CRT 2018 Conservatorship Scorecard Metrics¹

	Fannie Mae	Freddie Mac
UPB of Newly Acquired Mortgages ² (\$ in billions)	\$62	\$73
Percent of Acquisitions UPB Covered by CRTs ²	99%	89%
Credit Risk Transferred Through CRT ³	28%	86%

¹Through June 30, 2018

²For Fannie Mae: Mortgages acquired during the twelve months ended June 30, 2018. For Freddie Mac: Mortgages acquired in 2017.

³For Fannie Mae, credit risk transferred is defined as the amount of credit risk capital of target acquisitions transferred in the twelve months ended June 2018 divided by pre-CRT credit risk capital per the Conservatorship Capital Framework (excluding any buffers) of new acquisitions in the twelve months ended June 2018. For Freddie Mac, credit risk transferred is defined as the amount of credit risk capital of target acquisitions transferred in 2017 or 2018 divided by pre-CRT credit risk capital per the Conservatorship Capital Framework (excluding any buffers) of new acquisitions in 2017.



Appendix A: Single-Family Credit Risk Transfer

Enterprise Efforts to Transfer Credit Risk to the Private Sector

The Enterprises' public purposes include providing broad national secondary market liquidity for residential mortgage financing, both for single-family and multifamily mortgages. The Enterprises provide market liquidity by acquiring mortgage loans from lenders and creating securities backed by those mortgages for sale to investors. Through the securitization process, the Enterprises transfer the interest rate and liquidity risk associated with holding mortgage loans. The securitization process generally does not, however, transfer credit risk on these loans.¹

Each Enterprise manages the credit risk of its mortgage acquisitions and guarantees the timely payment of principal and interest to mortgage-backed securities investors. The Enterprises charge a guarantee fee in exchange for providing this guarantee, which covers administrative costs, projected credit losses from borrower defaults over the life of the loans, and the cost of holding capital to protect against projected credit losses that could occur during stressful macroeconomic conditions.² The following sections describe the Enterprises' activities to share credit risk through credit risk transfer programs.

The Role of Primary Mortgage Insurance in Sharing Credit Risk

Under their charters, loans acquired by Fannie Mae and Freddie Mac that have LTV ratios above 80 percent are required to have loan-level credit enhancement either in the form of mortgage insurance, a repurchase agreement, or seller retained participation in the loan.

¹ Freddie Mac's securitization of its multifamily loans through K-deals does transfer credit risk in addition to interest rate and liquidity risk.

² Currently, the guarantee fee also includes a 10 basis point charge as required by Section 401 of the Temporary Payroll Tax Cut Continuation Act of 2011, codified at 12 USC 4547.

This is a long-standing statutory requirement that pre-dates the Enterprises' development of additional credit risk transfer programs. Primary mortgage insurance (PMI) is the form of charter-eligible credit enhancement used most often. Primary mortgage insurance, which can be paid by the borrower, the lender, or the Enterprise, is obtained at the front-end of the mortgage transaction prior to acquisition by the Enterprises.

The Enterprises establish PMI coverage requirements that specify the insurance coverage needed on individual loans, and these coverage requirements vary depending on the type of loan and the LTV of the loan. Currently, for 30-year loans the typical standard level of coverage is roughly twice what is required to meet the Enterprises' minimum guidelines. The dollar amount of insurance coverage is referred to as risk-in-force (RIF). The RIF for each insured loan is calculated by multiplying the percentage of insurance coverage times the UPB of the mortgage. The total RIF for all PMIs represents the maximum level of coverage for all loans with mortgage insurance and is roughly equivalent to the Enterprises' total risk exposure to PMI counterparties.

While the total RIF associated with PMI is large, the actual level of credit risk sharing provided through insurance claims paid depends on the number of insured loans that default and the severity of losses on those loans. The loan-level coverage structure of PMI differs from the pool-level coverage that is used in other kinds of credit risk sharing transactions. The difference between the loan-level coverage of PMI and the pool-level coverage of recent credit risk transfer transactions means that the RIF figures for these two categories are not strictly comparable.

Enterprise Credit Risk Transfer Programs

The Enterprises have made significant progress toward fully integrating a credit risk transfer program into their business models.



Single-Family Credit Risk Transfer

The Enterprises have increased the amount of credit risk transferred year-over-year, and are now transferring credit risk on most higher risk new acquisitions for which credit risk transfer is economically sensible.

The Enterprises have also worked to develop a portfolio of different transaction structures,³ which include:

- Credit risk debt issuances
- Insurance/reinsurance transactions
- Senior/subordinate securities
- Lender front-end risk transfer transactions

As with primary mortgage insurance, the amount of credit risk transferred is referred to as RIF for the insurance products. For the Enterprises' debt issuances, Connecticut Avenue Securities (CAS) for Fannie Mae and Structured Agency Credit Risk (STACR) for Freddie Mac, and other products where securities are created, the amount of credit risk transferred is referred to as note size. For purposes of simplifying the discussion, this CRT Progress Report refers to the amount of credit risk transferred on all credit risk transfer transactions as RIF. The following subsections provide information about different single-family credit risk transfer structures.

Single-Family Credit Risk Transfer Transaction Structures

STACR/CAS Transactions: To date, the STACR and CAS debt issuances have been the dominant transaction structure used under the Enterprises' single-family credit risk transfer programs. STACR and CAS securities are issued as Enterprise debt and do not constitute the sale of mortgage loans. Instead, STACR and CAS are designed to track to the performance of a reference pool of mortgage loans that have been previously securitized into MBS guaranteed by the Enterprises and for which the Enterprises have assumed the credit risk.

The STACR/CAS structure has several key benefits. The liquidity of the to-be-announced (TBA) market is not affected by this structure because the loans referenced were previously pooled into guaranteed mortgage-backed securities and sold in the TBA market. The STACR and CAS transactions are also effectively fully collateralized by cash that investors pay to purchase the debt securities. This means that the Enterprises essentially have no counterparty or reimbursement risk with this structure. Investors pay for STACR and CAS notes in full at the time of purchase and absorb applicable credit losses through a reduction in principal on the underlying notes.

³ Additional information about each of the various credit risk transfer products is available in FHFA's report entitled *Overview of Fannie Mae and Freddie Mac Credit Risk Transfer Transactions*, available at <http://www.fhfa.gov/AboutUs/Reports/Pages/Overview-of-Fannie-Mae-and-Freddie-Mac-Credit-Risk-Transfer-Transactions-8212015.aspx>.



Other Single-Family Credit Risk Transfer Structures

The Enterprises use other credit risk transfer structures in addition to the STACR/CAS structure. Pursuing a broad portfolio of credit risk transfer transaction structures furthers FHFA's objectives of having the Enterprises diversify their investor base for credit risk transfers and being able to compare execution across different structures and market environments. The Enterprises are currently engaged in the following additional transaction types:

Insurance/Reinsurance Transactions: Insurance or reinsurance transactions are considered part of the credit risk transfer program and separate from the Enterprises' charter requirements applicable to loans with LTVs greater than 80 percent. To date, the Enterprises have focused on two pool-level products — Agency Credit Insurance Structure (ACIS) for Freddie Mac and Credit Insurance Risk Transfer (CIRT) for Fannie Mae. Instead of providing coverage on individual loans as with loan-level primary mortgage insurance, these pool-level policies cover a specified percentage of aggregate credit risk for a pool that includes thousands of loans.

Through the CIRT and ACIS structures, the Enterprises are purchasing insurance primarily from diversified reinsurers. These transactions are partially collateralized and distributed among a variety of highly-rated insurers, reinsurers, and reinsurer affiliates of mortgage insurers, which reduces counterparty, reimbursement, and correlation risk.⁴ Freddie Mac and Fannie Mae have different approaches to the reference pools behind their respective reinsurance deals. In the ACIS structure, which generally shares the same reference pool as STACR, Freddie Mac allocates sales between capital markets and reinsurance

investors. In contrast, Fannie Mae establishes separate reference pools for CAS and CIRT transactions. Fannie Mae and Freddie Mac disclose pricing for CIRT and ACIS transactions, respectively.

Senior/Subordinate Transactions: In a senior/subordinate securitization, an Enterprise sells a pool of mortgages to a trust which securitizes the cash flows into several tranches of bonds. The subordinated bonds (mezzanine and first-loss) are structured to absorb expected and unexpected credit losses, protecting the senior bond.

The collateral backing senior/subordinate transactions typically consists of mortgages for which a TBA market does not exist. Examples include:

- Super-conforming mortgage loans, which have balances between the national conforming loan limit and higher limits applicable in high-cost areas;
- Adjustable Rate Mortgages (ARMs); and
- Multifamily mortgages.

In 2017, Freddie Mac transitioned to the STACR Securitized Participation Interests (STACR SPI), where unguaranteed bonds are issued and senior cash flow is in the form of Freddie Mac PCs.

⁴ Reinsurers are often characterized by diversified lines of business, which helps mitigate the risk that the Enterprises' counterparties are correlated to the housing market stress and would have increased claims at the same time the Enterprise themselves are under stress.



Front-End Credit Risk Transfer Transactions: Front-end risk transfer transactions are structured so that risk is transferred prior to, or simultaneous with, Enterprise loan acquisition. To date, the Enterprises have executed front-end transactions with lenders, insurance companies, and reinsurance companies.

Lender Risk Sharing: Lender front-end risk sharing may be structured through the issuance of securities, which allows the originating lender to either hold the credit risk by retaining the securities or sell the credit risk by selling the securities to credit risk investors. Alternatively, lender front-end risk sharing may be executed without any securities issuance, whereby a lender retains all the credit risk transferred by the Enterprise but generally fully collateralizes its obligation.

Compensation paid to the lenders for the protection they provide on front-end transactions is based solely on economic considerations, not on the overall amount of loans the lenders sell to the Enterprises. For all front-end transactions, lenders are required to retain a material portion of the risk on the underlying loans and to collateralize their retained loss position.

Front-End Insurance Transactions: Insurers and Reinsurers participating in front-end transactions are generally diversified companies that provide collateral to mitigate counterparty risk. Participating insurers/reinsurers commit to insure, on a forward basis, loans meeting the Enterprises' credit eligibility guideline. The fill-up period for these commitments may range from 12-24 months. Because participating insurers/reinsurers cover a pool of loans that is acquired on a forward basis and the credit profile of the final covered pool may differ from the reference pool used to price the transaction, these Front-End Insurance Transactions may include concentration limits for certain risk attributes and/or a recalibration of the transaction pricing based upon the final profile of the covered pool. Loans, covered under these transactions, with LTVs greater than 80 percent typically have traditional primary mortgage insurance.



Appendix B: Multifamily Credit Risk Transfer

Risk sharing with the private sector is an integral part of the multifamily business models of both Enterprises. The following subsections provide information about different multifamily credit risk transfer structures.

Securitization with Subordination Transactions: Freddie Mac has developed variants of the K Certificate program that follow a senior/subordinate structure, but differ primarily by the type of loans in the transactions:

- Q Certificates are identical to K Certificates except that the loans are not underwritten by Freddie Mac when originated.
- KT Certificates are based on loans purchased by Freddie Mac that will not qualify for inclusion in a K Certificate transaction for an extended period of time.
- SB Certificates are based on low balance loans, SR Certificates are based on rental housing loans, and M and ML Certificates are based on loans made by government lenders to finance affordable housing projects. For the SB, SR, and M/ML Certificate programs, Freddie Mac underwrites the loans and guarantees senior bonds issued by the trusts, but does not purchase bonds from the trusts and subsequently issues structured pass-through securities.

Notes tied to Reference Pool Performance Transactions: Freddie Mac's SCR notes are similar in structure to single-family STACR notes where the repayment of principal to the note holders is based on the performance of a reference pool of loans.

The SCR Notes transfer credit risk on certain multifamily mortgage loans supporting affordable housing developments. The loans are funded by bonds issued by state and local housing finance agencies and guaranteed by Freddie Mac. Freddie Mac is compensated for guaranteeing the housing agency finance bonds through the issuance of the SCR Notes.

Risk Sharing Transactions: In Fannie Mae's multifamily program (known as DUS), Fannie Mae approved lenders underwrite and service loans based on Fannie Mae's underwriting criteria, which enables Fannie Mae to purchase or guarantee the loans without performing the underwriting. The lenders typically share in loan level credit losses in two ways: (1) lenders share up to one-third of the losses on a pro-rata basis or (2) lenders bear losses up to the first 5 percent of the unpaid principal balance of the loan and share in remaining losses up to a prescribed limit. By design, the DUS program loss sharing aligns lenders and Fannie Mae to maximize loan performance over the life of the loans. To minimize counterparty risk associated with lender risk-sharing, Fannie Mae requires DUS lenders to be financially strong with extensive underwriting and servicing experience. Additionally, DUS lenders must post collateral and maintain certain financial requirements when participating in risk-sharing with Fannie Mae.

Insurance and Reinsurance Transactions: Multifamily CRT transactions with the insurance/reinsurance industry are similar to the pool-level structures currently utilized for the single-family business. To date, only Fannie Mae has completed multifamily CRT transactions with the insurance/reinsurance industry.



Appendix C: CRT Principles, Concepts and Definitions

CRT Principles

FHFA assesses all Enterprise credit risk transfer activities using the same key principles. These principles include:

Reduce taxpayer risk: Transactions should transfer a meaningful amount of credit risk to private investors.

Economically sensible: The program should consist of transactions in which the cost to the Enterprise for transferring the credit risk does not meaningfully exceed the cost to the Enterprise of self-insuring the credit risk being transferred.

Continuity of core business: Transactions should not interfere with the continued operation of the Enterprises' core business, including the efficient operation of the to-be-announced (TBA) market or the ability of borrowers to access credit.

Repeatable: Whenever possible, transactions should be part of a regular program of similar transactions.

Scalable: Transaction structures should be capable of being scaled without significantly affecting the economics or management of the transaction.

Counterparty strength: In transactions in which the credit risk being transferred is not fully collateralized, credit risk transfer counterparties to the Enterprises should be financially strong companies that are able to fulfill their financial commitments even in adverse markets.

Broad investor base: The program should include different transaction structures to attract a diversified and broad investor base with the objective of improving pricing, increasing secondary market liquidity, and promoting market stability.

Stability through economic and housing cycles: Transaction structures should be designed to ensure that at least some investors will remain in the market through all phases of the housing price cycle, including economic downturns.

Transparency: Parties to a transaction should provide public disclosure of transaction information, whenever practical.

Level playing field: Credit risk transfer transactions should only reflect the cost of transferring credit risk and should not favor large mortgage originators over small ones.

CRT Concepts and Definitions

First Loss Position: Credit risk for a pool of mortgages can be decomposed into expected loss (under baseline economic conditions), unexpected loss (under stressful, yet plausible, economic conditions), and catastrophic loss (beyond unexpected losses). While there is no single definition of first loss for purposes of credit risk transfers, FHFA interprets "first-loss position" as starting with the first dollar of loss through all expected losses.

Expected Credit Loss: Credit loss projected, on average, to occur if housing market conditions proceed according to a stable long-term trend, particularly with regard to house price levels. Even in a healthy housing market, a pool of mortgages is likely to experience some credit losses (i.e., defaults on the underlying mortgages) as some borrowers face trigger events such as illness, job loss, or other unanticipated events.

Unexpected Credit Loss: Credit loss over and 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 (similar to what was experienced during the recent housing crisis), but short of catastrophic credit losses.



Catastrophic Credit Loss: Credit loss beyond unexpected loss that would be deemed highly unlikely to occur. There is no bright line between unexpected credit losses and catastrophic credit losses.

Credit Risk: In the case of residential mortgage loans, credit risk is risk of loss to a mortgage creditor stemming from a borrower's failure to repay the loan.

Credit Risk Transfer: Credit risk transfer occurs when a party exposed to credit risk transfers some or all of that risk to another party, usually accompanied by the payment of a fee for the other party's assumption of that risk. The Enterprises' credit risk transfer transactions are effective for a limited duration, typically a 10- to 12-year time period. The exact reimbursement terms and recognition of credit loss are a function of the specific credit risk transfer contract for that transaction. Risk transfer may result in the transferor's assumption of a different risk. For example, when an Enterprise transfers the credit risk on a mortgage loan for which the Enterprise has guaranteed payment of principal and interest, the Enterprise may assume risks associated with the counterparty, including reimbursement risk.

Counterparty Risk: Counterparty risk is the risk that a contractual counterparty will not perform in accordance with contract terms. This would include the counterparty's capacity to pay claims timely, such as its financial and operational strength, the depth and quality of its capital, and the diversification of its business. It also includes assessment of concentration exposures with that counterparty. When an Enterprise transfers the credit risk on a mortgage loan for which the Enterprise has guaranteed payment of principal and interest, the Enterprise assumes reimbursement risk from its risk transfer counterparties for losses incurred.

Reimbursement Risk: Reimbursement risk is the risk that the party(ies) to the credit risk transfer (front- or back-end) will not repay the Enterprise on time and in full for its portion of credit losses. When an Enterprise transfers credit risk while continuing to provide a guarantee to MBS investors for timely payments on principal and interest, the Enterprise assumes reimbursement risk from its risk transfer counterparty. This is an element of counterparty risk.

Front-End or Up-Front Credit Risk Transfer: This term applies to transactions in which the arrangement of the risk transfer occurs prior to, or simultaneous with, the acquisition of residential mortgage loans by an Enterprise. "Front-end" refers to the timing of the arrangement of the credit risk transfer and does not affect (either mitigate or exacerbate) the reimbursement risk assumed by an Enterprise.

Back-End Credit Risk Transfer: This term applies to transactions in which the arrangement of the risk transfer occurs after the acquisition of residential mortgage loans by the Enterprises. "Back-end" refers to the timing of the arrangement of the credit risk transfer and does not affect (either mitigate or exacerbate) the reimbursement risk assumed by an Enterprise.

Risk-in-Force (RIF): This term, when applied to Primary Mortgage Insurance, refers to the dollar amount of insurance. For Enterprise debt issuances and other products where securities are created, RIF refers to the amount of credit risk transferred. For purposes of the CRT Progress Report, RIF refers to the amount of credit risk transferred on all credit risk transfer transactions and represents the maximum loss exposure that could be absorbed by CRT investors and counterparties.



Appendix D: Estimating the Market-Implied Single-Family Guarantee Fee

The Enterprises retain a fee from the payments received on mortgages as compensation for guaranteeing timely payment of principal and interest on the mortgage pass-through securities they issue. The guarantee fee covers two cost categories:

Non-credit costs include:

- general and administrative expenses,
- statutory payroll tax, and
- residual risks that are not currently or cannot be transferred through CRT transactions (e.g., operational risk, term risk, counterparty risk).

Credit costs include:

- expected costs that result from the failure of some borrowers to make their payments, and
- cost of holding the modeled capital amount necessary to protect against potentially much larger unexpected losses that result from the failure of some borrowers to make their payments in a severe stress environment.

Calculation of Market-Implied Single-Family Guarantee Fee

Non-Credit Costs	=	G&A	=	~25 - 35 bps
		Treasury Allocation (TCCA)		
		Residual Risk (e.g. operational risk)		
+				
Credit Costs	=	Expected Costs	=	~14 - 31 bps
		Cost of Holding Capital		
+				
Total Implied Credit Costs				= ~39 - 65 bps



Implied Single-Family Credit Costs

Market pricing in the first half of 2018 for CAS transactions implied credit costs of 15 to 17 bps. Market pricing in the first half of 2018 for STACR transactions implied credit costs of 14 to 31 bps.

Single-Family Credit Costs Implied by Fannie Mae CAS Bond Pricing

CAS Tranche	2018-C01		2018-C02		2018-C03	
	Credit Spread to LIBOR (bps)	Implied Credit Cost (bps)	Credit Spread to LIBOR (bps)	Implied Credit Cost (bps)	Credit Spread to LIBOR (bps)	Implied Credit Cost (bps)
M1	60	0.2	65	0.1	68	0.2
M2	225	5.2	220	5.4	215	4.9
B1	355	3.6	400	4.6	375	4.1
B2 ¹	950	6.2	1000	6.7	1000	6.5
Implied Credit Costs		15.2		16.8		15.7

The annual cost of holding capital to protect against unexpected losses is the amount of capital required multiplied by the target rate of return on that capital. Pricing of CRT transactions provides insight into investors' views of credit costs. This market implied credit cost for a particular tranche can be estimated as a function of:

- Tranche size,
- Credit spread paid to investors as compensation for bearing the risk, and
- Weighted average life (WAL) of each tranche and the overall collateral pool.

Single-Family Credit Costs Implied by Freddie Mac STACR Bond Pricing

STACR Tranche	2018 DNA-1		2018 HQA-1		2018 HRP-1		2018 DNA-2	
	Credit Spread to LIBOR (bps)	Implied Credit Cost (bps)	Credit Spread to LIBOR (bps)	Implied Credit Cost (bps)	Credit Spread to LIBOR (bps)	Implied Credit Cost (bps)	Credit Spread to LIBOR (bps)	Implied Credit Cost (bps)
M1	45	0.1	70	0.1	85 ¹	0.0	80	0.3
M2	180	4.6	230	5.7	165	1.2	215	3.9
B1	315	2.7	435	3.7	375	6.0	370	3.2
B2 ¹	950	6.2	1,100	7.1	1,175	23.8	1,050	6.9
Implied Credit Costs		13.7		16.7		31.0		14.3

Methodology for calculating market-implied credit costs

A simplified scenario of 10 percent constant prepayment rate, 0.2 percent constant default rate, and 25 percent loss given default or loss severity are applied to calculate the weighted average life. The calculations assume that 100 percent of the notes are sold (no retention by the Enterprises).

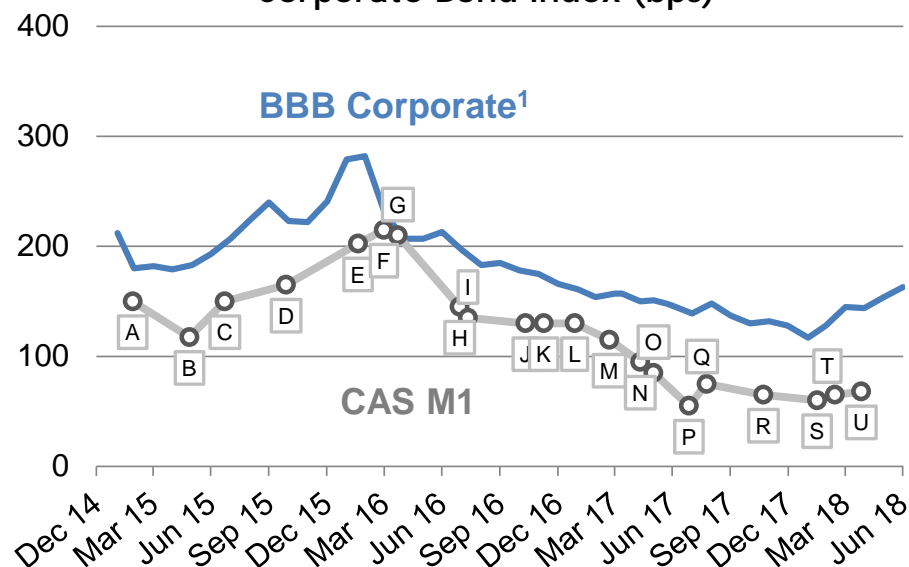
¹ For bonds not sold, the spread reflects the indication price reported in the respective prospectus.



Appendix E: Comparison of Single-Family CRT Market Pricing - Mezzanine Bonds to Corporate BBB Index

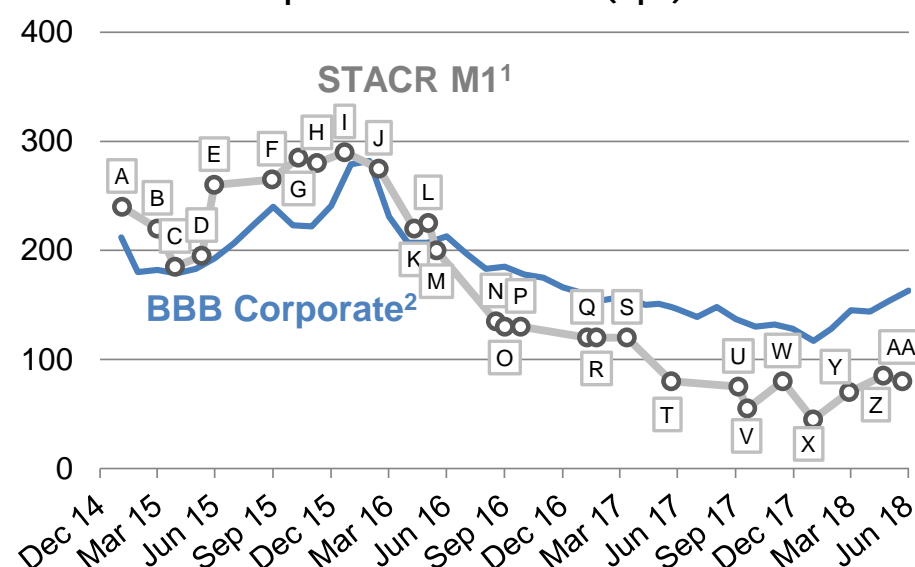
Credit spreads on the higher rated CRT mezzanine tranches performed generally similar to the corporate BBB index from the second quarter of 2016 to second quarter of 2018.

Fannie Mae CAS M1
Credit Spread at Issuance vs BBB
Corporate Bond Index (bps)



¹Bank of America Merrill Lynch US Corporate BBB Index

Freddie Mac STACR M1¹
Credit Spread at Issuance vs BBB
Corporate Bond Index (bps)



¹Credit spreads at issuance prior to 2017 are for STACR M2.

²Bank of America Merrill Lynch US Corporate BBB Index

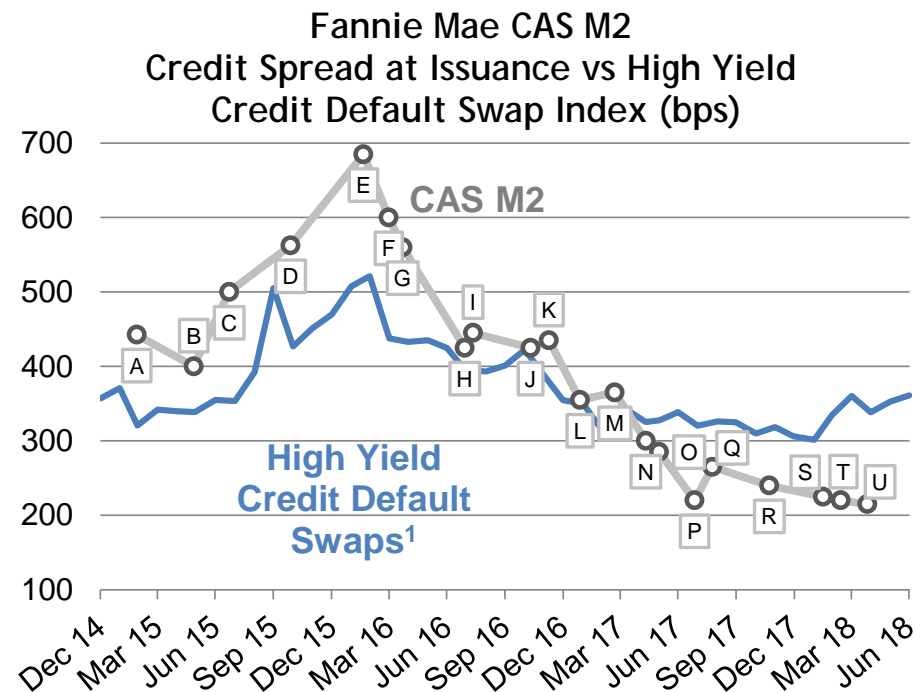
A - 2015 CO1	H - 2016 C04	O - 2017 C04
B - 2015 CO2	I - 2016 C05	P - 2017 C05
C - 2015 C03	J - 2016 C06	Q - 2017 C06
D - 2015 C04	K - 2016 C07	R - 2017 C07
E - 2016 C01	L - 2017 C01	S - 2018 C01
F - 2016 C02	M - 2017 C02	T - 2018 C02
G - 2016 C03	N - 2017 C03	U - 2018 C03

A - 2015 DN1	J - 2016 HQA1	S - 2017 DNA2
B - 2015 HQ1	K - 2016 DNA2	T - 2017 HQA2
C - 2015 DNA1	L - 2016 HQA2	U - 2017 DNA3
D - 2015 HQ2	M - 2016 DNA3	V - 2017 HQA3
E - 2015 DNA2	N - 2016 HQA3	W - 2017 HRP1
F - 2015 HQA1	O - 2016 DNA4	X - 2018 DNA1
G - 2015 DNA3	P - 2017 HQA4	Y - 2018 HQA1
H - 2015 HQA2	Q - 2017 DNA1	Z - 2018 HRP1
I - 2016 DNA1	R - 2017 HQA1	AA - 2018 DNA2

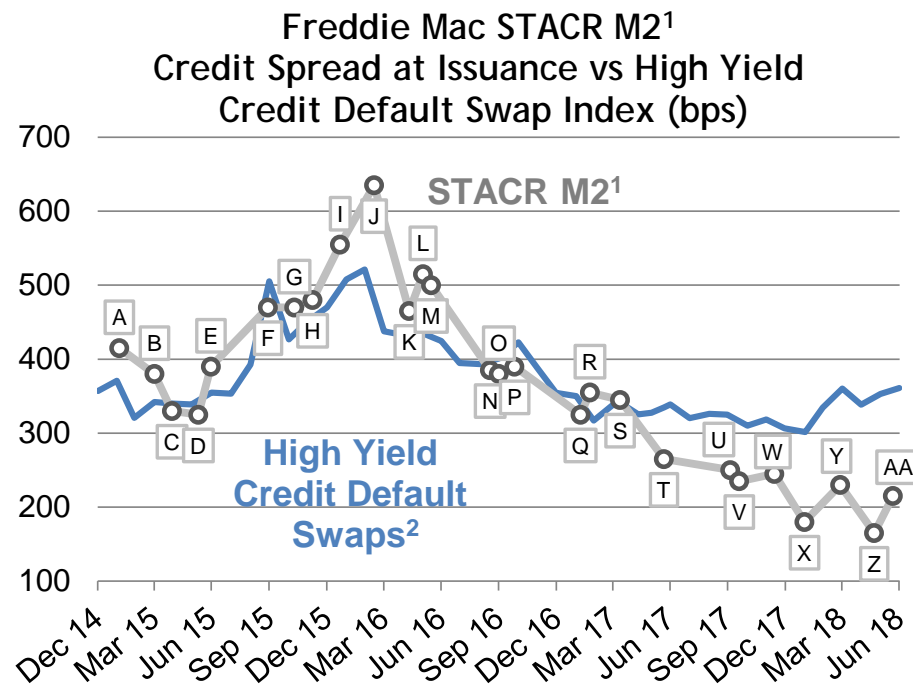


Appendix F: Comparison of Single-Family CRT Market Pricing - Mezzanine Bonds to High Yield Credit Default Swaps

Credit spreads on the lower rated CRT mezzanine tranches performed generally similar to the high yield credit default swap index from the second quarter of 2016 to second quarter of 2018.



¹Markit CDX North American High Yield Index



¹Credit spreads at issuance prior to 2017 are for STACR M3.

²Markit CDX North American High Yield Index

A - 2015 C01	H - 2016 C04	O - 2017 C04
B - 2015 C02	I - 2016 C05	P - 2017 C05
C - 2015 C03	J - 2016 C06	Q - 2017 C06
D - 2015 C04	K - 2016 C07	R - 2017 C07
E - 2016 C01	L - 2016 C01	S - 2018 C01
F - 2016 C02	M - 2017 C02	T - 2018 C02
G - 2016 C03	N - 2017 C03	U - 2018 C03

A - 2015 DN1	J - 2016 HQA1	S - 2017 DNA2
B - 2015 HQ1	K - 2016 DNA2	T - 2017 HQA2
C - 2015 DNA1	L - 2016 HQA2	U - 2017 DNA3
D - 2015 HQ2	M - 2016 DNA3	V - 2017 HQA3
E - 2015 DNA2	N - 2016 HQA3	W - 2017 HRP1
F - 2015 HQA1	O - 2016 DNA4	X - 2018 DNA1
G - 2015 DNA3	P - 2017 HQA4	Y - 2018 HQA1
H - 2015 HQA2	Q - 2017 DNA1	Z - 2018 HRP1
I - 2016 DNA1	R - 2017 HQA1	AA - 2018 DNA2

