



Clarity MBS Dashboards

User Guide



March 2024



Introduction

This guide is designed to explain the functionality of the Clarity MBS Data Intelligence platform's MBS Reports - how to navigate them, how to interpret the results, and how the numbers are derived. Three main reports and visualizations are available: Cohort-Level Prepayments Dashboard, Prepayment Heatmap Dashboard, and Affordable & Green MBS Issuance Volume Dashboard.

Cohort-Level Prepayments Dashboard

The goal of the Cohort-Level Prepayments Dashboard is to show the daily prepayment rates for specific cohorts of mortgage securities, while also illustrating in-month payoff activity. This may provide a view into long-term prepayment patterns for specific groups of mortgages, and short-term fluctuations in these patterns. For more information, please see the [Daily Prepayment Report](#) webpage on the Freddie Mac website. This webpage contains the main Daily Prepayment Report that feeds into the dashboard as well as the Supplemental and Historical Daily Prepayment Reports.

In November 2023, data from Fannie Mae's comparable daily prepayment reports was added to this dashboard. For more information, please refer to [Fannie Mae's Daily Prepayment Report page](#) on the Fannie Mae website. We make no representations or warranties concerning the accuracy or completeness of Fannie Mae's daily prepayment reports.

Prepayment Heatmap Dashboard

The goal of the Prepayment Heatmap Dashboard is to provide a visualization of the month-over-month changes in specific cohort-level prepayment rates at any given point during each month. This may provide a view into mortgage borrowers' conditions and the performance of mortgage-based products. Historical data is only available back to January 2019. However, we expect the main use will be to monitor voluntary payoff activity with each weekly data update prior to the release of the upcoming monthly factor. For more information, please see the [Daily Prepayment Report](#) webpage on the Freddie Mac website. This webpage contains the main Daily Prepayment Report that feeds into the dashboard.

In March 2024, data from Fannie Mae's comparable daily prepayment reports was added to this dashboard. For more information, please refer to [Fannie Mae's Daily Prepayment Report page](#) on the Fannie Mae website. We make no representations or warranties concerning the accuracy or completeness of Fannie Mae's daily prepayment reports.

Affordable & Green MBS Issuance Volume Dashboard

The goal of the Affordable & Green MBS Issuance Volume Dashboard is to provide a visualization of the total monthly issuance volume of the various Affordable and Green MBS programs that Freddie Mac and Fannie Mae offer. For more information on Freddie Mac Green MBS, please see the Single-Family Green Bond website, which displays the most recently issued Green pools with their characteristics, and contains a file with the full issuance of Green pools to date. The Affordable programs that Freddie Mac offers that can be visualized on the dashboard are [Home Possible](#) and [HFA Advantage](#). The dashboard can be used to both compare issuance volume over time or by different attributes for each GSE's respective programs, as well as compare the two GSEs' issuance volumes with each other. The information about Fannie Mae's Affordable and Green MBS programs is based on information available on Fannie Mae's website; we make no representations or warranties concerning the accuracy or completeness of such information.



Logging into and Navigating the Platform

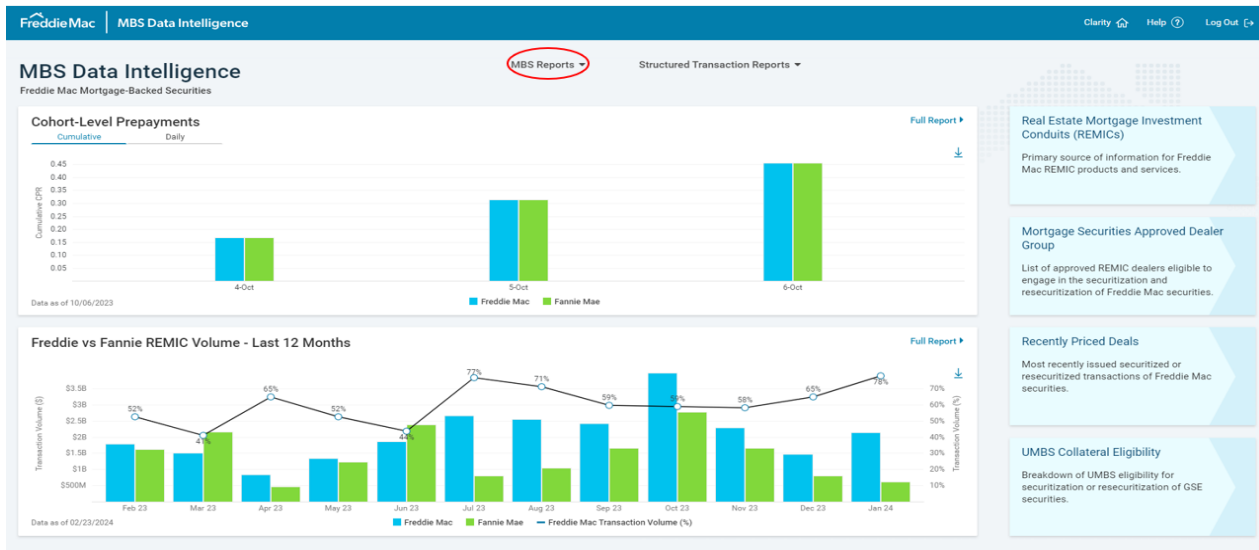
The MBS Dashboards are located within Freddie Mac's proprietary public data visualization platform, [Clarity](#). To start, register for an account on the Clarity platform, which will require your full name, email, organization, and organization type. When your account has been created and verified, log into Clarity with the credentials that you just created.

The image shows two side-by-side screenshots of the Freddie Mac Clarity platform. The left screenshot is the 'Secure Login' page, which includes fields for 'Email Address' and 'Password', a 'Remember my email address' checkbox, and a 'Sign On' button. Below the login form, there are links for 'Change Password?', 'Trouble Signing On?', and 'Don't have an account? Register now', with the latter circled in red. The right screenshot is the 'Create Your Account' page, which includes fields for 'Email Address', 'First Name', 'Last Name', 'Organization Name', 'Title / Role', 'Organization Type', 'Description', 'Password', and 'Confirm Password'. Below these fields is a 'Terms and Conditions' section with a checkbox for 'I have read and agree to the Terms of Use' and a 'Create Account' button, which is also circled in red.

Logging into Clarity will prompt you to select your Tool. Click on MBS Data Intelligence.

The image shows the Freddie Mac Clarity Data Intelligence landing page. At the top, there is the Freddie Mac logo and the text 'Clarity Data Intelligence®'. Below this, there is a 'Select your Tool' section with two options: 'CRT Data Intelligence' and 'MBS Data Intelligence'. The 'MBS Data Intelligence' option is circled in red. The 'MBS Data Intelligence' option includes the text: 'Data intelligence tools and dashboards for Single-Family mortgage backed securities, including ESG Bond and REMIC issuance, and Daily Prepayment Reporting.'

This will then take you to the MBS Data Intelligence landing page. To navigate to the MBS reports specifically, click on the MBS Reports arrow on the top right of the screen.

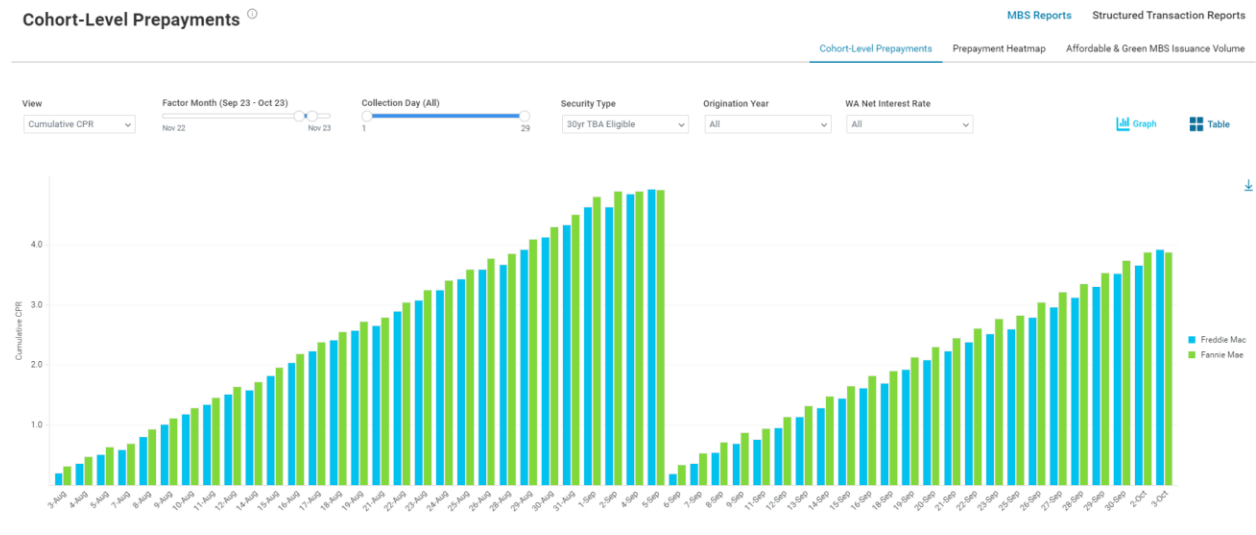


To access the relevant dashboards, click on the MBS Reports at the center top and select the desired dashboard.

Cohort-Level Prepayments Dashboard

The Chart Interface

This is an example of what the Cohort-Level Prepayment Dashboard will look like. You will see several side-by-side blue and green bars, which show the cumulative full voluntary prepayment rates as of each collection day of the month, resetting at the start of each new factor month. The blue bars are for Freddie Mac mortgage securities and the green bars are for Fannie Mae mortgage securities. Note that curtailments and buyouts are not included in the prepayment rates displayed in this dashboard, only full voluntary payoffs (resulting from, for example, refinancings or sales of mortgaged properties).



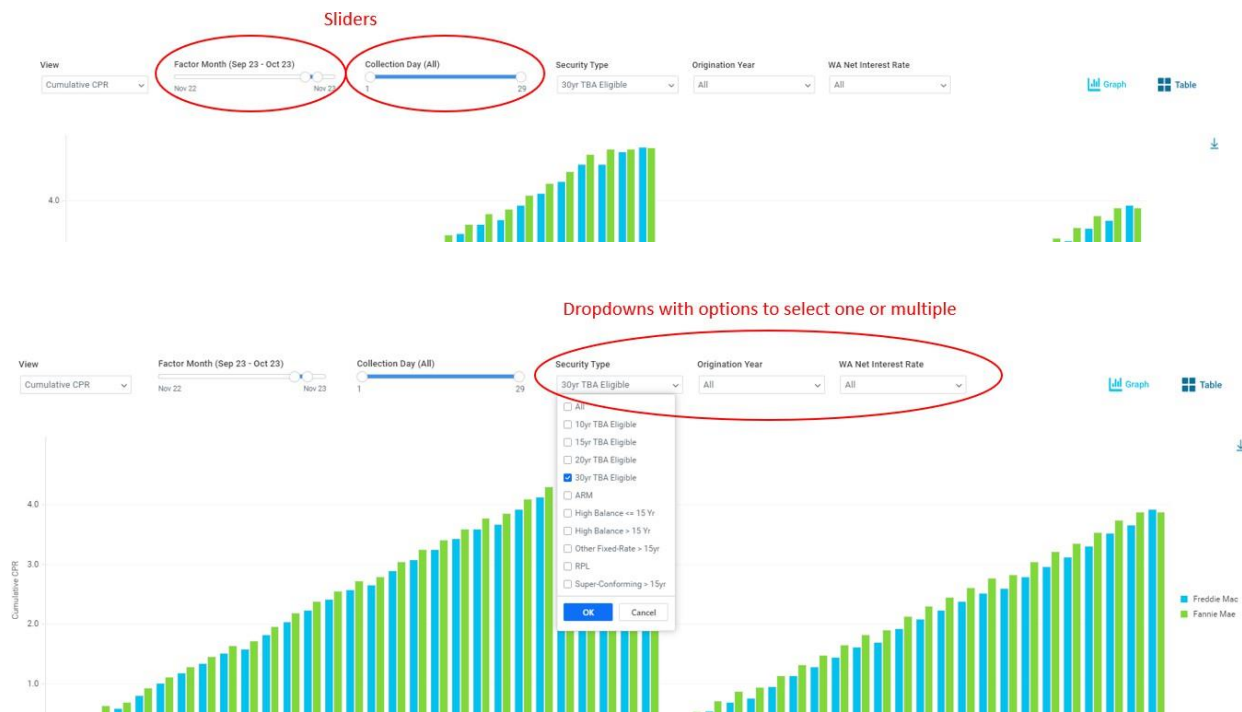
With your cursor, hover over individual bars to show the cumulative CPR for that date, to the nearest tenth of a percentage point.



Data within the report will be updated every Wednesday at approximately 4:30 PM, showing the full voluntary payoff activity up until the end of the previous business week (the previous Friday). This allows users to monitor the latest prepayment trends and daily numbers prior to monthly factor releases.

Input Parameters

The chart can be modified with several parameters: Factor Month, Collection Day, Security Type, Origination Year (vintage), and WA Net Interest Rate (coupon). The chart can also produce either cumulative CPRs or daily CPRs. Change these parameters by either dragging the sliders or clicking on options in the dropdown menus shown below. The dropdown menus allow for multiple categories to be selected at once.



Factor Month

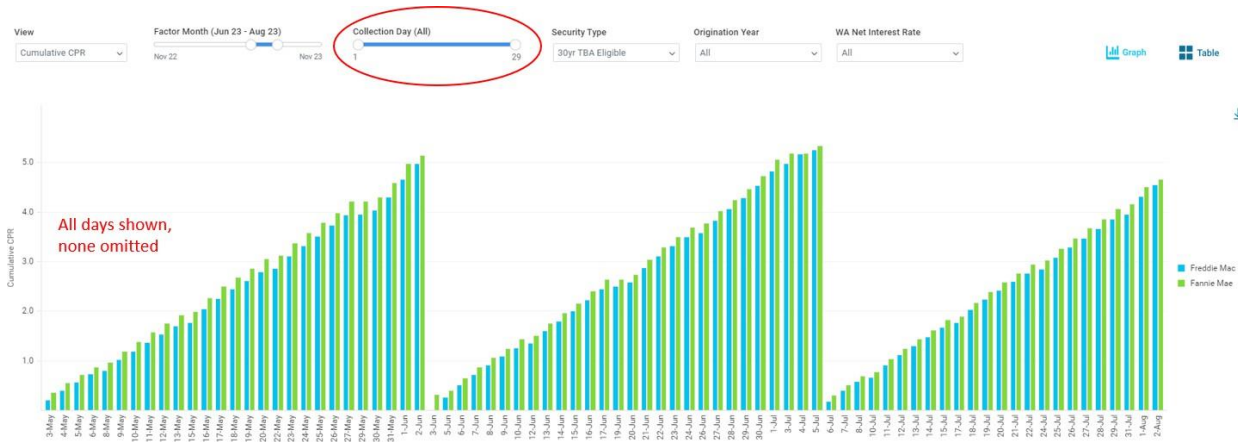
The Factor Month indicates the month when the data is compiled and the pool-level factors are disclosed to investors (on business day 4), representing the realized prepayment activity of the prior month. Note that activity for the first two business days of the factor month are included if reported to the GSEs by the second business day. For example, data with a factor month of August 2023 reflects the payoff activity that occurred from the 3rd business day in July 2023 through and including the first two business days in August. This is reflected in the fact that a factor month of August 2023 will show collection dates in July 2023.

Multiple factor months can be selected, which will give the data for all the days available for the selected factor months. As the cumulative CPR metric is aggregated on a factor month basis, the exact day in which the factor month changes can be observed. The image below shows the cumulative CPR data for the factor months of June 2023 through August 2023, 3 months total, reflecting prepayments in May 2023 through July 2023.

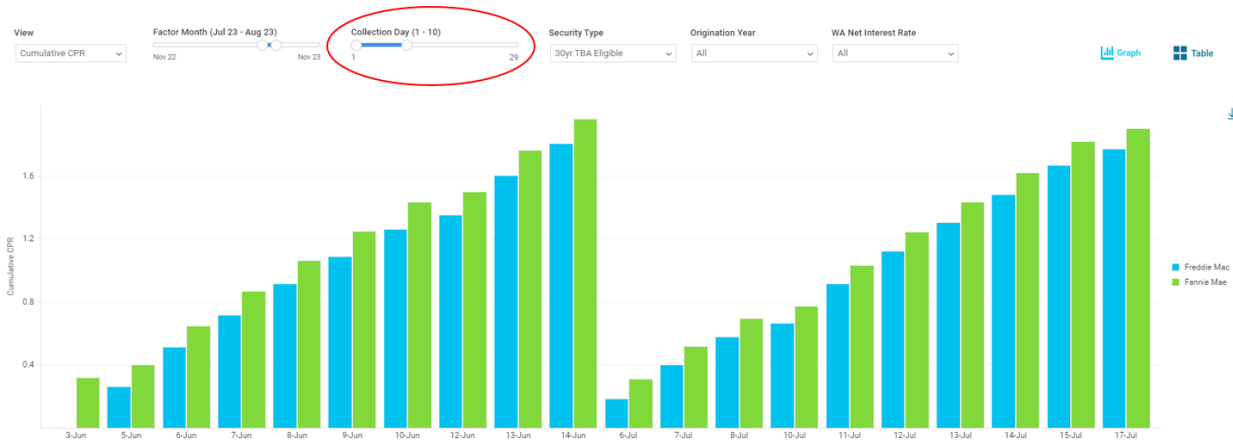


Collection Day

The Collection Day slider indicates the range of days of the collection period to include when displaying the cumulative CPRs. For instance, selecting all collection days will simply display the daily cumulative CPRs for every day in that collection month. The image below shows what this looks like for the factor months of June 2023 through August 2023.



Selecting a range of days will just display the collection days within that range. In the image below, selecting the collection day range of 1-10 will only show the first 10 collection days in each period, thus omitting the 11th day and beyond of the July 2023 and August 2023 factor months. This is especially useful for months that are not complete. If the factor month of August only had 10 collection days in the most recent data, selecting just the first 10 collection days will give a more useful comparison between the July 2023 and August 2023 factor months.

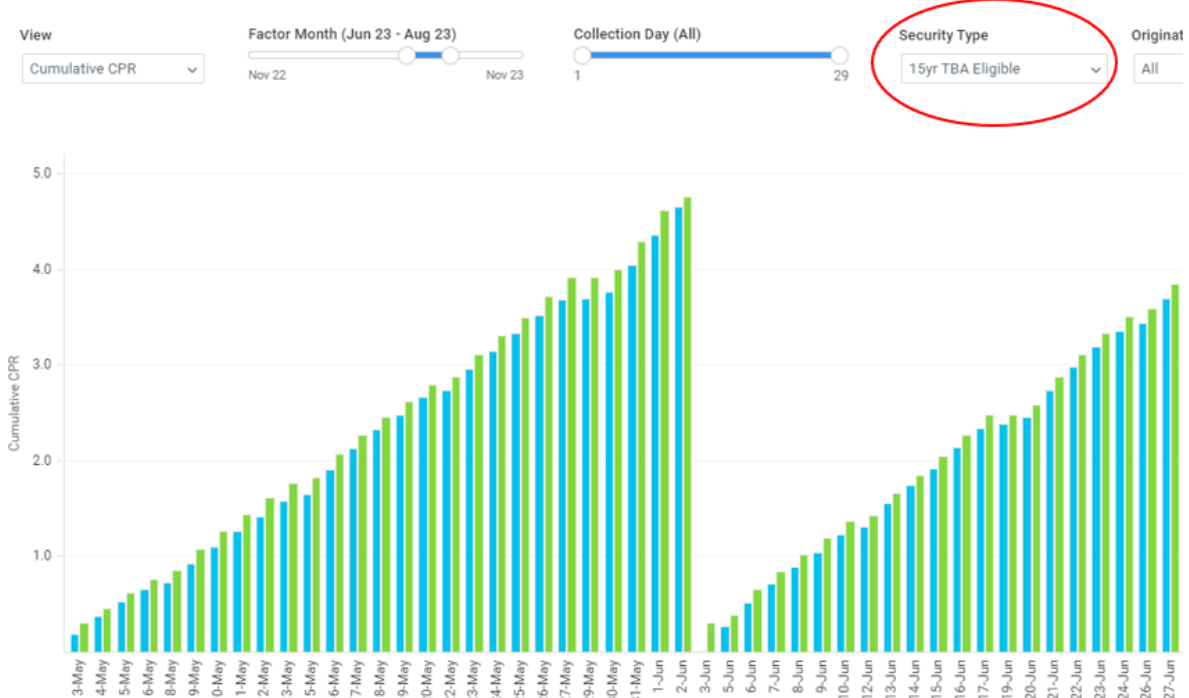
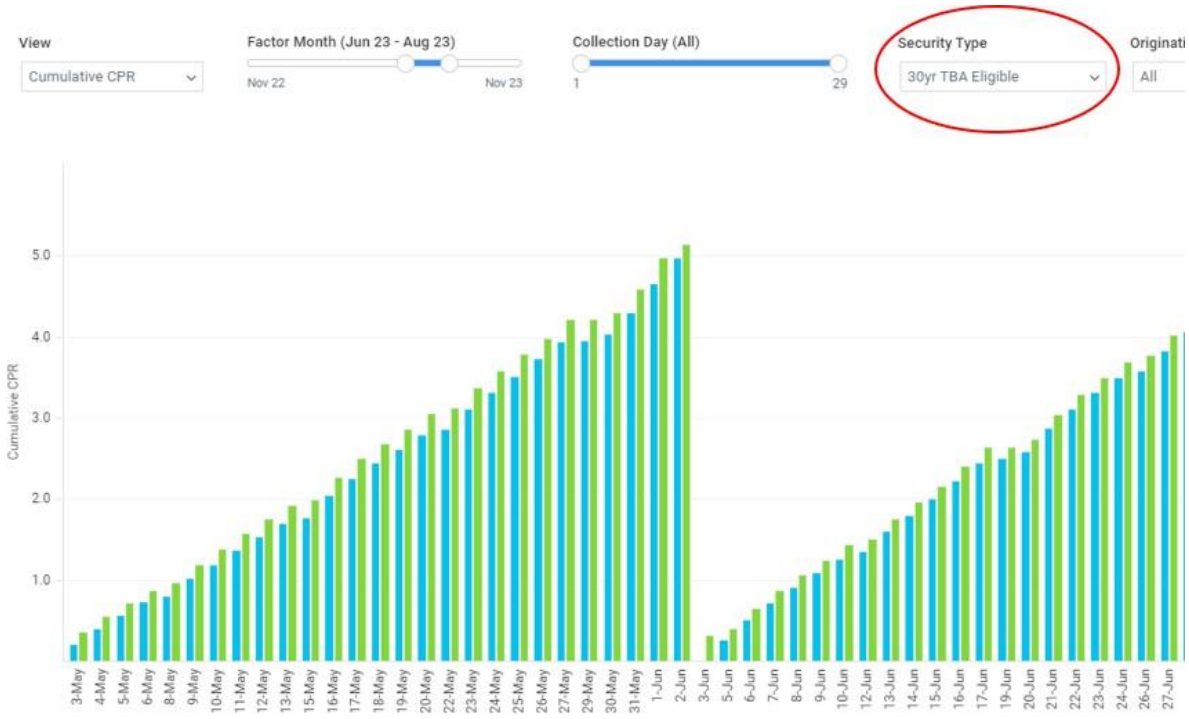


Note that if a factor month has 24 days and the range is set to 1 to 26, for instance, the chart for that factor month will still show all 24 bars. If the factor month instead has 28 days, then the chart will omit the 27th and 28th days.

It is important to note that collection days include all days from Monday through Saturday, including holidays, making the count per month higher than regular business day counts. For a table of the number of collection days for each month from 2019 - 2024, please check the appendix at the end of this guide.

Security Type

The security type dropdown menu allows you to choose if you would like to view prepayment rates for individual security types, or to aggregate a weighted CPR of multiple security types, based on the cumulative UPB of their type, thus providing a heavier weighting to securities types with larger outstanding issuance amounts. The possible security types to select include 10-, 15-, 20-, and 30-year TBA-eligible fixed rate mortgages, ARMs, other fixed rate mortgages > 15 years or <= 15 years, RPLs, government fixed-rate and Super-Conforming >15 years or <= 15 years (High Balance > 15 years or <=15 years for Fannie Mae cohorts). Individual security types, or any combination of them, can be selected. The image below shows the cumulative CPRs over time for 30-year TBA-eligible fixed rate mortgages, and 15-year TBA-eligible fixed rate mortgages.

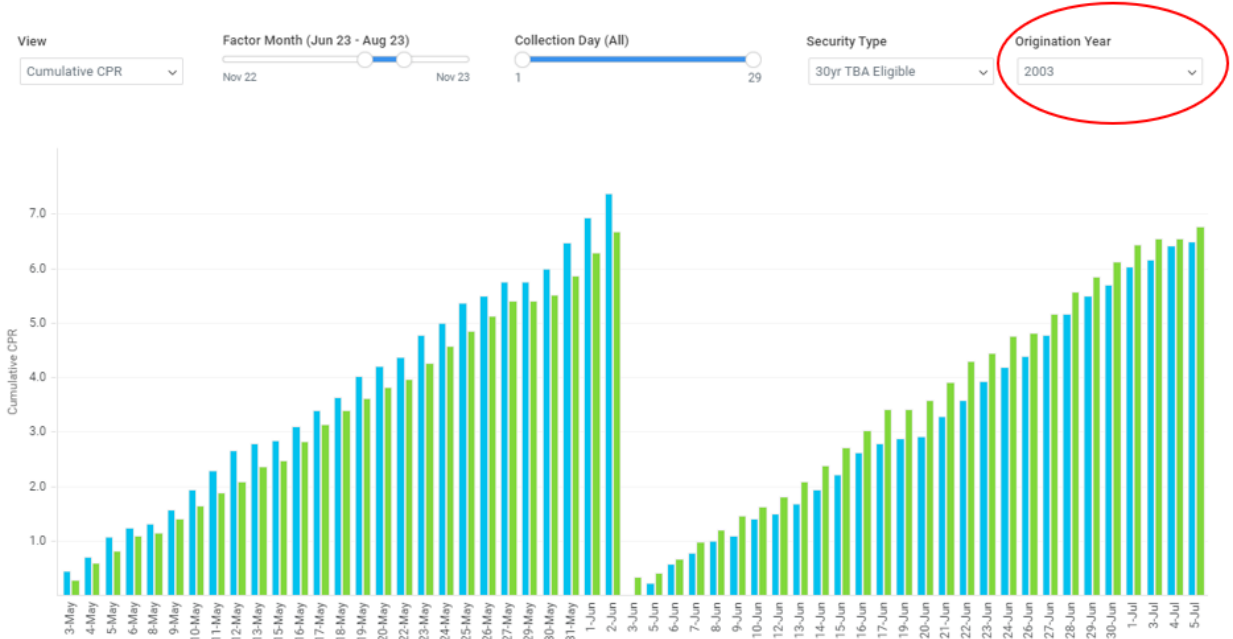
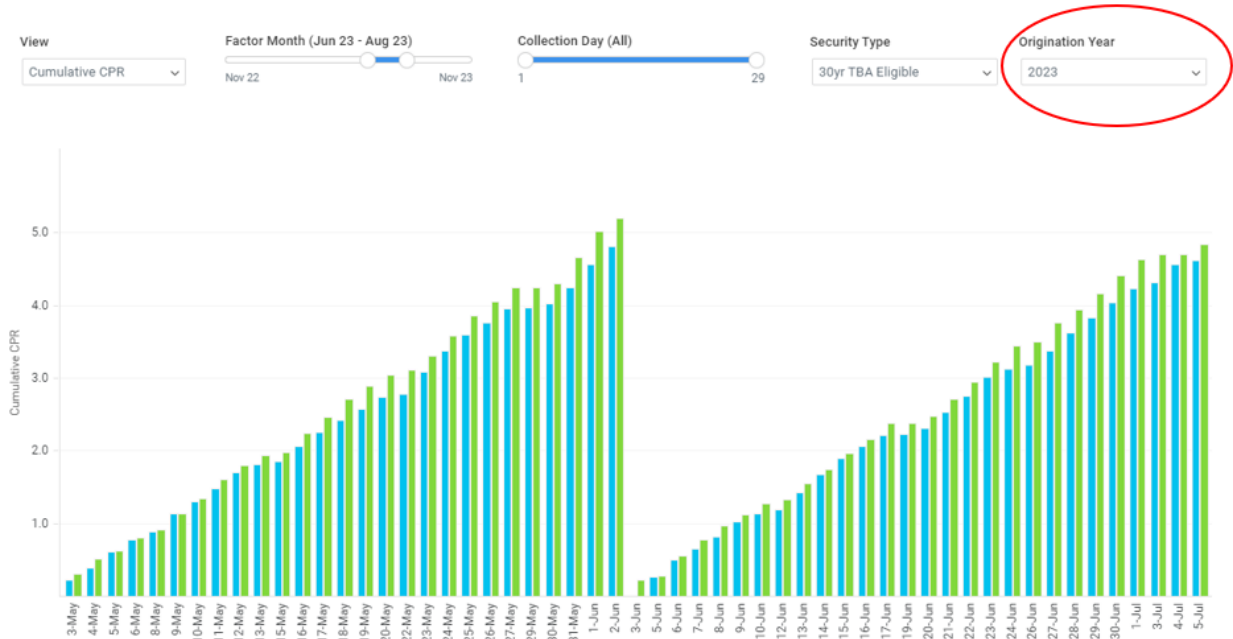


While the charts look similar, the prepayment rates for 15-year TBA-eligible mortgages for this timeframe of June 2023 were slightly slower at the end of the month.



Origination Year

The origination year dropdown selects loans with only the specified year of origination, also weighting by UPB. The image below shows the difference in CPRs for all 30-year TBA-eligible mortgages originated in the year 2023 vs those originated in 2003.

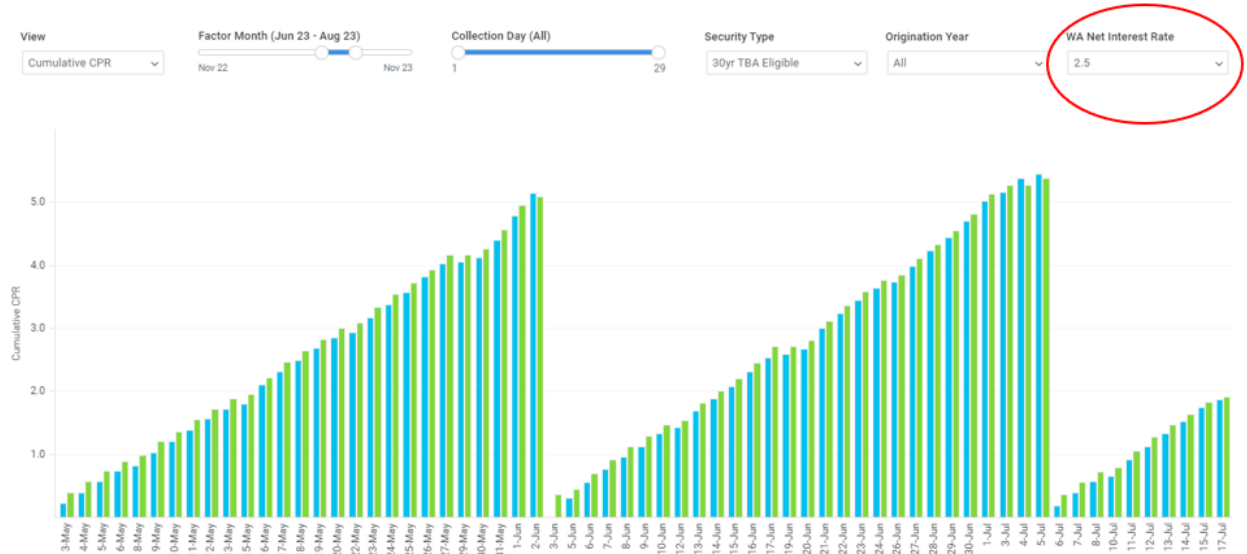
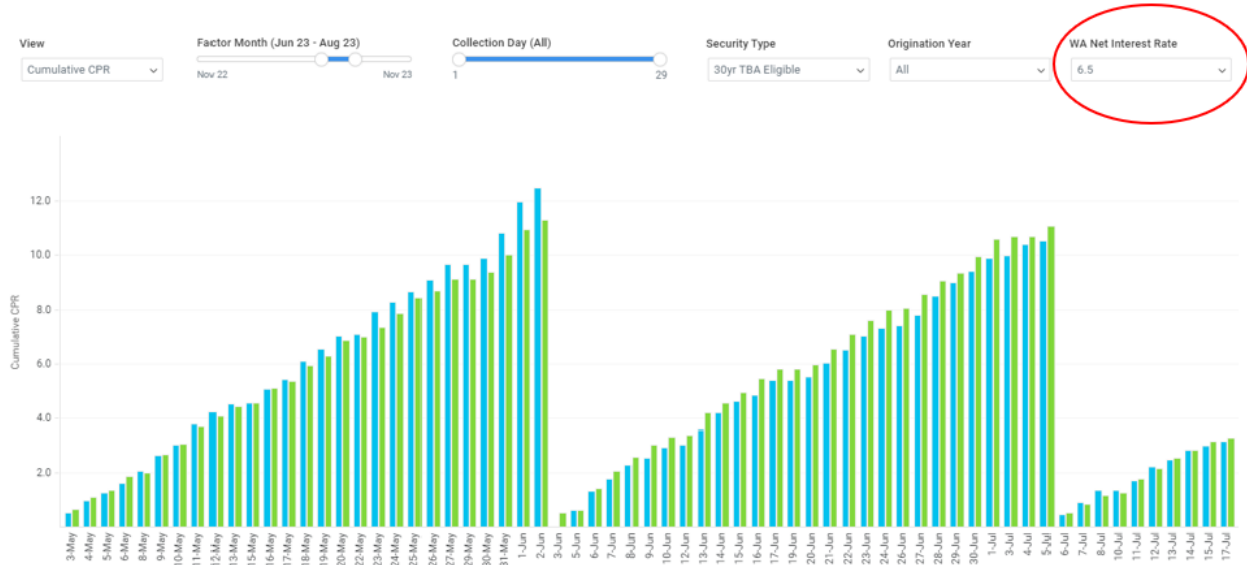


This shows that the prepayment rate of the 2003 vintage was much faster for this period.



WA Net Interest Rate

The WA Net Interest Rate, or coupon, dropdown allows you to select included or excluded coupon rates to aggregate for cumulative CPR calculations. The image below shows the CPRs for the 6.5 and 2.5 note rates for the June 2023 through August 2023 factor months.



This shows that, all else held equal, the prepayment rates of 30-year TBA-eligible mortgages with a coupon of 6.5 were much faster than those with a coupon of 2.5.



Additional Features

Cumulative vs. Daily View

You can view the daily change in CPR for the selected days instead of the cumulative CPRs for those days by clicking on the View dropdown to the far left. The image below is the daily CPR visualization for the June 2023 through August 2023 factor months for all 30-year TBA-eligible mortgages. This view is particularly useful for viewing fluctuations in prepayment rates on a weekly basis, for example, and changes to daily prepayment rates over time that may be harder to discern when looking at cumulative CPR.

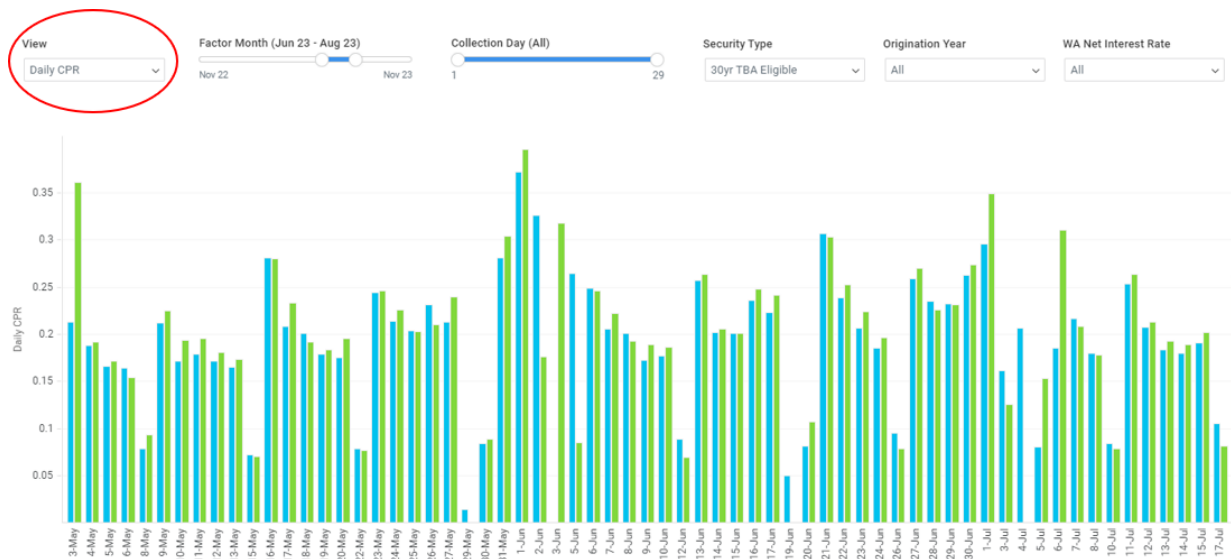


Table vs. Graph View

You can view the data in graph or table form by selecting the desired format with the buttons on the right-side of the screen. The image below is an example of what one such table might look like.



WA Net Interest Rate

All ▼



Date	Freddie Mac	Cumulative CPR	Fannie Mae
2-May	0.21		0.36
4-May	0.40		0.55
5-May	0.57		0.72
6-May	0.73		0.88
8-May	0.81		0.97
9-May	1.02		1.19
10-May	1.19		1.38
11-May	1.36		1.58
12-May	1.53		1.76
13-May	1.70		1.93
15-May	1.77		1.99
16-May	2.04		2.27
17-May	2.25		2.50
----	---		---

Prepayment Heatmap Dashboard

The Heatmap Interface

The image below is an example of what the heatmap page will look like. You will see two side-by-side grid visualizations, one shaded in red and green, and the other shaded in blue. The left red/green chart illustrates cumulative month-over-month voluntary CPR changes for specific cohorts, while the right blue chart illustrates total UPB at the start of the factor month for those same cohorts.

● Number ○ Percentage

WA Net Interest Rate	Cumulative M/M Voluntary CPR Change											Total	Total Cohort Current UPB (\$B)											Total		
	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5		7	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6		6.5	7
Total	-0.5	-0.6	-0.7	-0.6	-0.8	-0.7	-0.6	-0.7	-0.7	-1.6	-2.7	1.9	-0.7	\$193.6	\$1521.2	\$1137.4	\$699.2	\$474.2	\$378.9	\$257.3	\$215.9	\$163.1	\$85.5	\$33.9	\$2.2	\$5122.4
2023					-0.6	0.1	-0.4	-0.2	-1.5	-3.2	2.2	-0.8	-0.7						\$5.2	\$16.9	\$74.7	\$91.4	\$46.6	\$21	\$1.4	\$264.6
2022		-0.4	-0.6	-0.3	-0.5	-0.3	-0.4	-0.7	-1.0	-2.3	-1.9	1.0	-0.6		\$27.4	\$148.1	\$131.4	\$114.7	\$129.6	\$134.1	\$101.4	\$51.9	\$27.8	\$11.4	\$0.6	\$944.6
2021		-0.4	-0.5	-0.7	-0.4	-1.6	0.5						-0.6	\$106.4	\$905.2	\$590.6	\$44.5	\$10	\$2.4							\$1699.1
2020		-0.6	-0.7	-0.9	-0.7	-1.5	-1.5	-1.5					-0.8	\$97.1	\$209.6	\$365.7	\$103.3	\$18.9	\$7.2	\$2.5						\$1113.3
2019			0.1	-0.8	-1.4	-0.9	-0.5	-1.9					-0.8			\$26.6	\$91.3	\$46.5	\$25.1	\$12	\$4.7				\$204.4	
2018				-1.0	-1.2	-1.3	-1.3	-0.7					-1.3				\$1.4	\$18.6	\$45	\$29.2	\$6.7				\$100.9	
2017				-0.6	-1.1	-1.0	-1.2						-1.0				\$8.9	\$62.1	\$42.4	\$11.1					\$124.5	
2016			-0.3	-0.8	-0.5	-0.2	-1.7						-0.7			\$3.1	\$10.1	\$40.6	\$13.7	\$2					\$160.4	
2015				-0.7	-1.0	-0.3	-0.8						-0.8				\$25.9	\$55.7	\$16.4	\$1.5					\$99.5	
2014					-0.0	-0.7	-0.1						-0.4					\$17.6	\$27.5	\$4.9					\$50.3	
2013					-2.3	-0.9	-0.7	-0.7	-1.4				-0.9			\$1.4	\$69.5	\$32.2	\$17.1	\$3.2					\$122.6	
2012					-0.9	-0.2	-0.8	-0.1	-1.7				-0.5			\$1.7	\$44.0	\$47.7	\$12.8	\$1					\$106	
2011						0.4	-1.3	-0.9	-0.7				-0.8					\$7.1	\$15.1	\$12	\$3.2				\$37.5	





Data within the report will be updated every Wednesday at approximately 4:30 PM, showing the full voluntary payoff activity up until the end of the previous business week (the previous Friday). This allows users to monitor the latest prepayment trends prior to monthly factor releases.

Input Parameters

The heatmap can be modified with four parameters: the Agency, the Factor Month, the Collection Day, and the Security Type. The Collection Day parameter will not affect the blue Total Cohort Current UPB chart as this value only changes once per month. All four parameters will affect the Cumulative M/M Voluntary CPR Change chart. To change their values, click on the dropdown menus shown in the image below.

Agency	Factor Month	Collection Day	Security Type
Freddie Mac	August 2023	24	30yr TBA Eligible

Number Percentage

Agency

The Agency indicates the issuer of the underlying collateral. The dropdown options are All, Freddie Mac, and Fannie Mae. All shows a combined month-over-month CPR change for both Freddie Mac and Fannie Mae, while selecting the specific agency will show the month-over-month CPR change for that agency.

Factor Month

The Factor Month indicates the month when the data is compiled and the pool-level factors are disclosed to investors (on business day 4), representing the realized prepayment activity of the prior month. Note that activity for the first two business days of the factor month are included if reported to the GSEs by the second business day. For example, data with a factor month of June 2023, shown below, reflects the payoff activity that occurred between the 3rd business day in May 2023 and the 2nd business day of June. Therefore, the month-over-month CPR change chart illustrates the differences in **cumulative CPR** between the corresponding collection days of April 2023 and May 2023. The total UPB chart will show the outstanding UPB for cohorts at the beginning of the June 2023 factor month. Note that the dashboard will always compare the cumulative prepayment rates in the selected factor month relative to the immediately preceding month, as of the same collection day. Comparisons over longer time periods are not currently supported. Factor Months can be selected between February 2019 (when data was first collected, representing January 2019 payoffs) and the current factor month.



Agency:
 Factor Month:
 Collection Day:
 Security Type:

Number Percentage

WA Net Interest Rate	Cumulative M/M Voluntary CPR Change												Total
	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	
Total	0.8	0.9	1.2	1.2	1.1	1.1	0.8	0.6	0.5	1.3	2.4	5.5	1.0
2023						0.9	1.2	-0.3	0.2	1.0	2.1	5.0	0.4
2022		0.6	0.8	1.1	0.7	1.0	0.7	0.9	0.8	1.5	2.8	5.9	0.9
2021	0.9	0.8	1.2	1.5	1.9	-0.7							1.0
2020	0.7	1.1	1.2	1.1	1.5	1.4	1.0						1.1
2019			1.2	1.5	1.7	1.6	0.7	1.5					1.5
2018				3.8	1.0	1.5	1.3	1.7					1.4
2017				1.8	1.1	1.8	2.1						1.5
2016			-1.1	1.2	1.1	1.2	1.0						1.1
2015				0.9	0.9	1.3	3.6						1.1
2014					1.1	1.1	0.8						1.1
2013			1.0	0.8	0.9	0.4	0.7						0.8
2012			0.6	1.1	1.1	0.5	-0.2						1.0
2011					0.2	1.2	1.1	0.9					1.0
2010					0.7	1.0	0.5	1.4					0.9

Collection Day

The Collection Day indicates the first X days of the collection period to include when computing month-over-month (M/M) cumulative CPR changes. A Collection Day of 20 for the Factor Month of June 2023 will display the cumulative CPR differences between the first 20 days of the June 2023 collection period and the first 20 days of the May 2023 collection period, while a Collection Day of 14 will compare the first 14 days, and so on. Collection Day will not change the current UPB chart, as that is based on beginning of the month values. For example, the first M/M CPR change chart below is with a collection date of 20 days for June 2023, and the second is with a collection date of 14 days instead, showing the difference in prepayment speeds at different points within the same reporting month.



Agency: Factor Month: Collection Day: Security Type:

Number Percentage

Cumulative M/M Voluntary CPR Change													
WA Net Interest Rate	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	Total
Total	0.3	0.4	0.5	0.6	0.4	0.4	0.2	0.1	0.0	0.6	1.1	4.6	0.4
2023						0.5	0.7	-0.4	-0.2	0.5	0.3	2.9	-0.0
2022		0.2	0.2	0.5	0.3	0.3	0.2	0.2	0.3	0.7	1.7	6.2	0.3
2021	0.5	0.3	0.6	0.6	0.4	-0.8							0.4
2020	0.2	0.5	0.5	0.4	0.9	-0.3	0.2						0.5
2019			0.5	0.8	0.7	0.7	-0.1	-0.1					0.6
2018				2.5	0.3	0.5	0.3	0.8					0.5
2017				0.8	0.4	1.0	1.2						0.7
2016			-1.0	0.6	0.4	0.6	0.7						0.5
2015				0.3	0.4	0.5	1.5						0.4
2014					0.6	0.3	0.3						0.4
2013			0.7	0.4	0.4	-0.1	0.1						0.4
2012			0.7	0.4	0.4	0.0	-1.0						0.4
2011					-0.2	0.5	0.6	0.2					0.4
2010					0.4	0.5	-0.0	1.0					0.4

Agency: Factor Month: Collection Day: Security Type:

Number Percentage

Cumulative M/M Voluntary CPR Change													
WA Net Interest Rate	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	Total
Total	0.3	0.3	0.4	0.4	0.3	0.4	0.2	0.1	-0.0	0.4	1.0	0.3	0.3
2023						0.5	0.4	-0.2	-0.2	0.2	0.2	-1.7	-0.1
2022		0.2	0.1	0.4	0.3	0.2	0.1	0.1	0.1	0.6	1.7	2.2	0.2
2021	0.3	0.2	0.4	0.5	0.4	-0.6							0.3
2020	0.2	0.4	0.4	0.3	0.6	-0.1	0.9						0.4
2019			0.4	0.6	0.5	0.8	0.2	-0.0					0.5
2018				1.7	0.4	0.5	0.2	0.7					0.4
2017				1.0	0.3	0.9	1.2						0.6
2016			-0.7	0.3	0.3	0.6	1.3						0.3
2015				0.1	0.4	0.5	1.2						0.4
2014					0.5	0.6	0.6						0.6
2013			0.1	0.4	0.2	-0.0	0.0						0.2
2012			0.6	0.2	0.2	0.2	-0.2						0.2
2011					-0.2	0.6	0.7	0.8					0.5
2010					-0.0	0.5	0.2	0.8					0.4



You can notice some slight differences in cumulative cohort prepayment speeds.

It is important to note that collection days include all days from Monday through Saturday, including holidays, making the count per month higher than regular business day counts. For a table of the number of collection days for each month from 2019 - 2024, please check the appendix at the end of this guide.

Collection Day Edge Cases

While the Collection Day parameter sets calculations such that the cumulative CPR after X days for the collection month is compared with the cumulative CPR after X days for the month prior, edge cases arise when the total number of collection days in the two months differs.

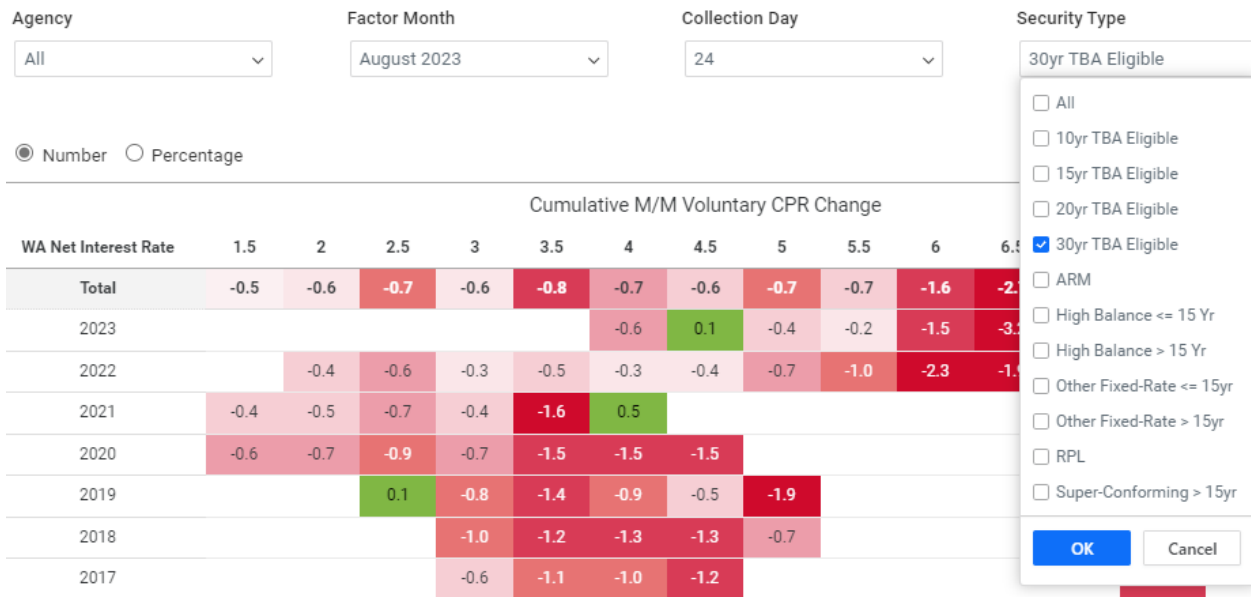
If the selected factor month had more days in it than the prior factor month, then days exceeding the maximum in the prior factor month are compared to the final day of the prior month instead. For example, the factor month of June 2023 had 27 collection days, and the prior factor month of May 2023 had 24 collection days. The charts for Collection Days 25, 26, and 27 will compare the cumulative CPRs for cohorts in June 2023 with the cohort CPRs for Collection Day 24 in May 2023.

If the selected factor month had fewer days in it than the prior factor month, then the final day in the factor month is modified to be compared to the month-end day of the prior month instead, effectively skipping over the extra days in the prior month. For example, the factor month of May 2023 had 24 collection days, and the prior factor month of April 2023 had 28 collection days. The chart for Collection Day 24 will compare the cumulative CPRs of cohorts after the full 24 days in May 2023 with cumulative CPRs after the full 28 days in April 2023, skipping the 24th through 27th days in April 2023. The chart for Collection Day 23 will compare the first 23 days for factor month May 2023 with the first 23 days of factor month April 2023 as per the usual process.

When toggling between factor months, the collection day will remain the same so long as the collection day exists in the other factor month(s) selected. For example, if collection day 3 has been selected for a particular month, when selecting a different month, the collection day will remain 3. However, when selecting a different month where the collection day does not exist in that month, the collection day will default to the last available collection day of that month. For example, if July 2023 and collection day 27 are selected, when changing the month to August 2023, the collection day will default to 24 – the last collection day of August.

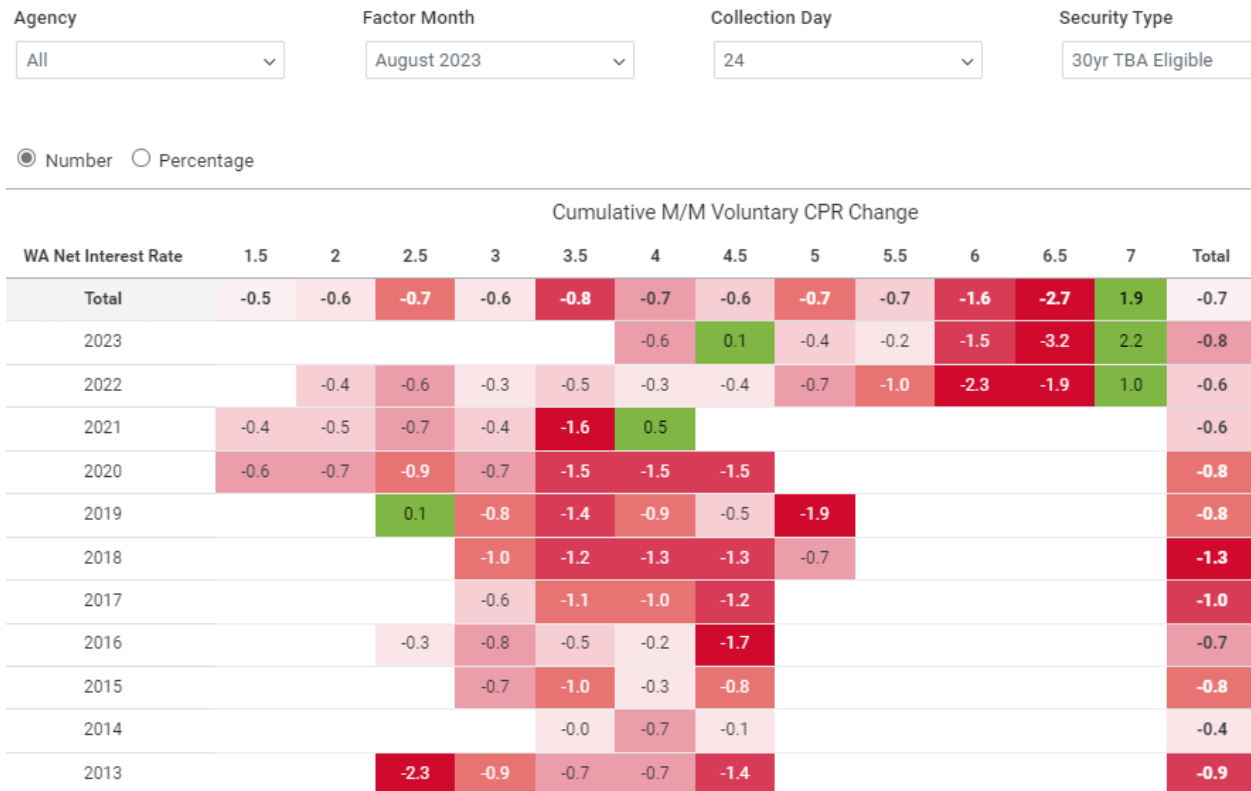
Security Type

The Security Type dropdown allows you to select which categories of securities to include in the visualization calculations and allows for different combinations of security types. The total list includes 10-, 15-, 20-, and 30-year TBA-eligible fixed rate mortgages, ARMs, other fixed rate mortgages greater than or less than 15 years, RPLs, government fixed-rate and Super-Conforming >15 years or <= 15 years. Selecting multiple security types will weigh the month-over-month CPR changes by the UPBs for the respective individual security types, while the total UPBs will sum up the UPBs for the selected security types' cohorts.



The M/M Voluntary CPR Change Chart

The below graph shows the cumulative month-over-month change in the voluntary CPR of cohorts depending on their loan origination year (vintage) and weighted average net interest rate (coupon).



There is a Total row and a Total column; the total row, on top of the grid, calculates a weighted average



CPR change for each coupon across all origination years, while the total column on the right of the grid calculates a weighted average CPR change for each origination year across the entire coupon range. The intersection of the two gives the overall CPR change for all origination years and coupons combined for the given month, collection day, and security type. These weights are all based on the cumulative UPBs for the individual cohorts, which can be found in the Total Cohort Current UPB column on the right.

		Cumulative M/M Voluntary CPR Change												
WA Net Interest Rate		1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	Total
Total		-0.5	-0.6	-0.7	-0.6	-0.8	-0.7	-0.6	-0.7	-0.7	-1.6	-2.7	1.9	-0.7
2023							-0.6	0.1	-0.4	-0.2	-1.5	-3.2	2.2	-0.8
2022			-0.4	-0.6	-0.3	-0.5	-0.3	-0.4	-0.7	-1.0	-2.3	-1.9	1.0	-0.6
2021		-0.4	-0.5	-0.7	-0.4	-1.6	0.5							-0.6
2020		-0.6	-0.7	-0.9	-0.7	-1.5	-1.5	-1.5						-0.8
2019			0.1	-0.8	-1.4	-0.9	-0.5	-1.9						-0.8
2018				-1.0	-1.2	-1.3	-1.3	-0.7						-1.3

Individual Cell Interpretation and Cell Shading

Each individual cell represents the month-over-month CPR change of that specific cohort for the specified month and collection day number compared to that same cohort for the prior month and same number of collection days, barring edge cases as outlined above. For example, this circled cell below shows the difference in CPR between the factor months of July and August for the cohort of 30-year TBA-eligible mortgages with the origination year of 2022 and coupon of 4.5, which is a -0.4 CPR difference after 24 collection days in both periods.

Agency: Factor Month: Collection Day:

Number Percentage

		Cumulative M/M Voluntary CPR Change									
WA Net Interest Rate		1.5	2	2.5	3	3.5	4	4.5	5	5.5	
Total		-0.5	-0.6	-0.7	-0.6	-0.8	-0.7	-0.6	-0.7	-0.7	
2023							-0.6	0.1	-0.4	-0.2	
2022			-0.4	-0.6	-0.3	-0.5	-0.3	-0.4	-0.7	-1.0	
2021		-0.4	-0.5	-0.7	-0.4	-1.6	0.5				
2020		-0.6	-0.7	-0.9	-0.7	-1.5	-1.5	-1.5			

The shading of the cell indicates how extreme the difference is relative to the maximum and minimum CPR change that occurred during the selected period. A dark red shaded cell indicates that the CPR change was negative and close to the highest observed negative change for that month, while a dark green shade indicates a positive CPR change close to the highest observed positive change for that month. The lighter the shading, the lower the magnitude compared to the maximum for that month. Since



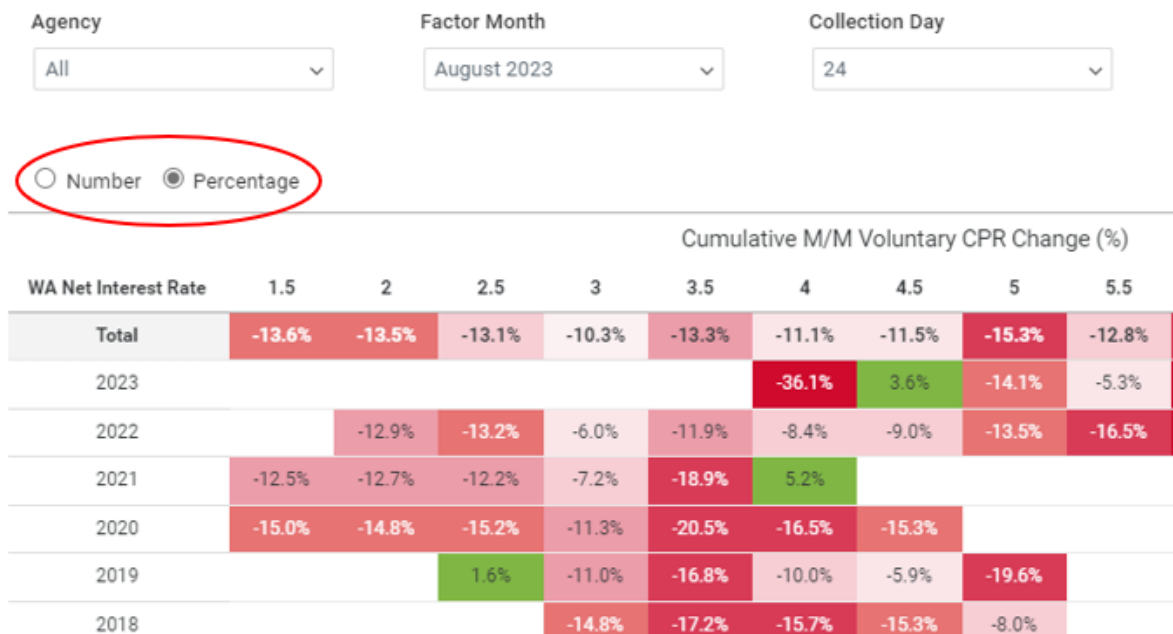
these comparisons are relative for positive and negative changes only, a negative change of -6.0 CPR may still be a light red cell if the maximum for that month was a -20.0 CPR change for a particular cohort, while a positive change of 6.0 CPR may be a dark green cell if it was the highest positive change in a cohort's prepayment rate for that month and collection day.

A legend for the shading colors can be found below, generated dynamically based on the maximum positive or negative change. Note that the shadings for the totals column and row are generated separately, with absolute values for shades not being consistent with that of the main table.



Number vs. Percentage

You can quickly change between number/percentage cell values, which converts the month-over-month CPR change for that cohort between an absolute CPR value and the percent change, by clicking on these two options.



This can change the shading; Two cells can have the same absolute CPR change of 2.0, but if one's prior CPR was 8.0 and the other's was 3.0, then one will see a percent CPR change of 25% and the other will see a change of 66.6%, resulting in a very different visualization. In practice, however, such differences are relatively insignificant and difficult to notice for most of the data.

The Total Cohort Current UPB Chart

The right graph in the image below shows the total UPB in a particular cohort, also broken down by a particular weighted-average net interest rate and year of origination.



Agency: All | Factor Month: August 2023 | Collection Day: 24 | Security Type: 30yr TBA Eligible

Number Percentage

WA Net Interest Rate	Cumulative M/M Voluntary CPR Change											Total	Total Cohort Current UPB (\$B)											Total		
	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5		7	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6		6.5	7
Total	-0.5	-0.6	-0.7	-0.6	-0.8	-0.7	-0.6	-0.7	-0.7	-1.6	-2.7	1.9	-0.7	\$193.6	\$1821.2	\$1157.4	\$659.2	\$474.2	\$378.9	\$257.3	\$215.9	\$163.1	\$85.5	\$33.9	\$2.2	\$5122.4
2023																										\$264.5
2022																										\$944.5
2021																										\$1699.1
2020																										\$1119.3
2019																										\$204.4
2018																										\$100.9
2017																										\$124.5
2016																										\$190.4
2015																										\$99.5
2014																										\$50.3
2013																										\$122.6
2012																										\$108
2011																										\$37.5
2010																										\$32.5

This table uses the same year index to the far left as the CPR change chart.

Individual Cell Interpretation and Cell Shading

Individual cells show the total outstanding UPB for each cohort. For example, the circled cell shows the total UPB for 30-year TBA-eligible mortgages in billions of USD at the beginning of the August factor month.

Number Percentage

WA Net Interest Rate	Total Cohort Current UPB (\$B)											Total	
	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5		7
Total	\$114	\$727.5	\$504	\$281.8	\$195.6	\$157.2	\$112.2	\$100.1	\$75.9	\$39.1	\$13.8	\$0.6	\$2321.8
2023						\$1.8	\$7.1	\$34.9	\$43.8	\$22.6	\$8.6	\$0.6	\$119.5
2022		\$42.7	\$68.4	\$61.1	\$50.6	\$62.7	\$63.3	\$49.6	\$25.3	\$13.2	\$5.1		\$441.9
2021	\$65.4	\$438.1	\$274	\$38.7	\$4.8	\$1.1							\$822.2
2020	\$48.6	\$246.6	\$146.9	\$38.6	\$7.2	\$3	\$1						\$491.8
2019			\$13.1	\$41.1	\$19.3	\$10.1	\$5.5	\$2.1					\$91.3
2018				\$0.6	\$7.5	\$17.6	\$12.1	\$2.7					\$40.4
2017				\$4.3	\$26.7	\$16.6	\$4.3						\$52

The current UPB chart only has two total columns to the far right and at the top of the chart, which sum up the total UPBs for all cohorts of the given vintage and coupon rate, respectively. The top right cell shows the total outstanding UPB at the beginning of the current Factor Month for the selected security types. Shading of the cells is based on the largest observed total UPBs for individual cohorts; the lighter the cell, the lower the UPB for that cohort compared to the maximum. A legend for these shadings can be found below, which are also generated dynamically based on the values in the data.

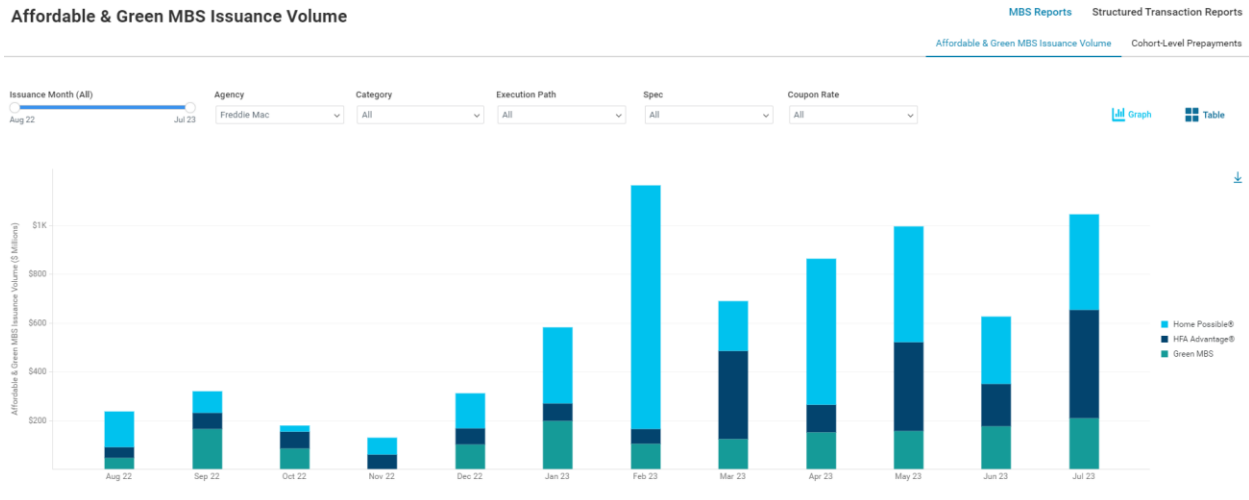
Lowest	Lower	Low	Lower Med.	Higher Med.	High	Higher	Highest
--------	-------	-----	------------	-------------	------	--------	---------



Affordable & Green Bond Issuance Volume Chart

The Chart Interface

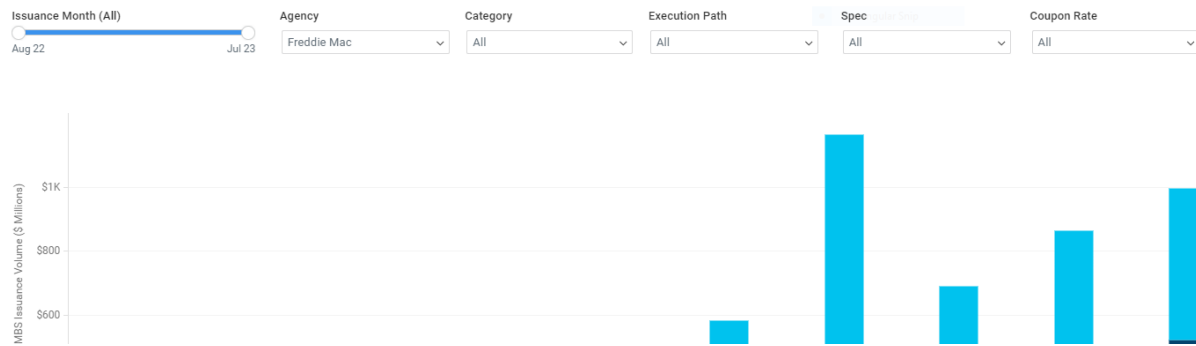
The image below is an example of what the chart will look like, outlining issuance of Freddie Mac or Fannie Mae’s Affordable/Green bond programs for a given month in the form of stacked bars. Bar size is measured in millions of dollars, larger bars signify larger amounts of issuance for the included Affordable or Green bond programs. The key can be found to the far right of the chart, which shows which colors are correlated with a given program.



Note that the chart displays a maximum 12-month-long rolling window. When the data on issuance for the latest month is added, the earliest month in the timeframe will no longer be visible.

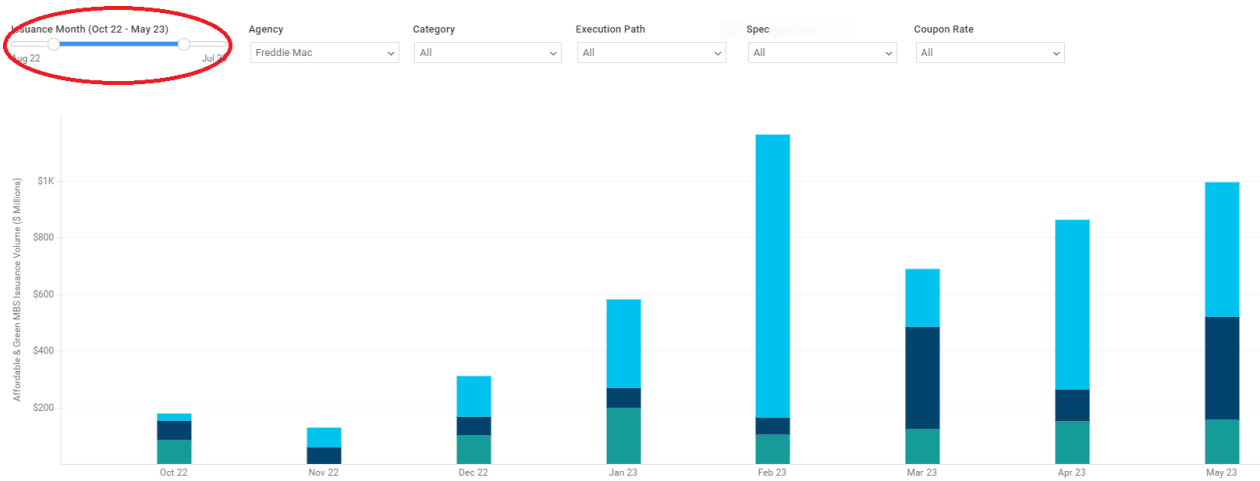
Input Parameters

Several different input parameters are available to change the data you wish to view. These include the issuance month slider, and the agency, category, execution path, spec classification, and coupon rate dropdowns. These can be found above the chart. Some of the dropdowns are unique options only, while others allow for combinations of variables to be selected.



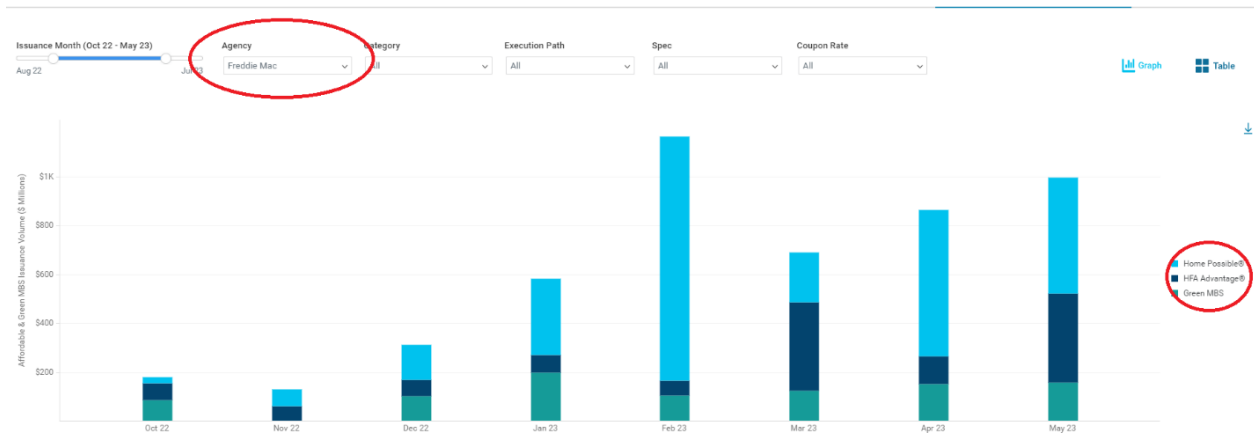
Issuance Month

The Issuance Month slider allows you to select the window of issuance months you would like to view, from the most recent month of issuance data to 12 months prior.



Agency

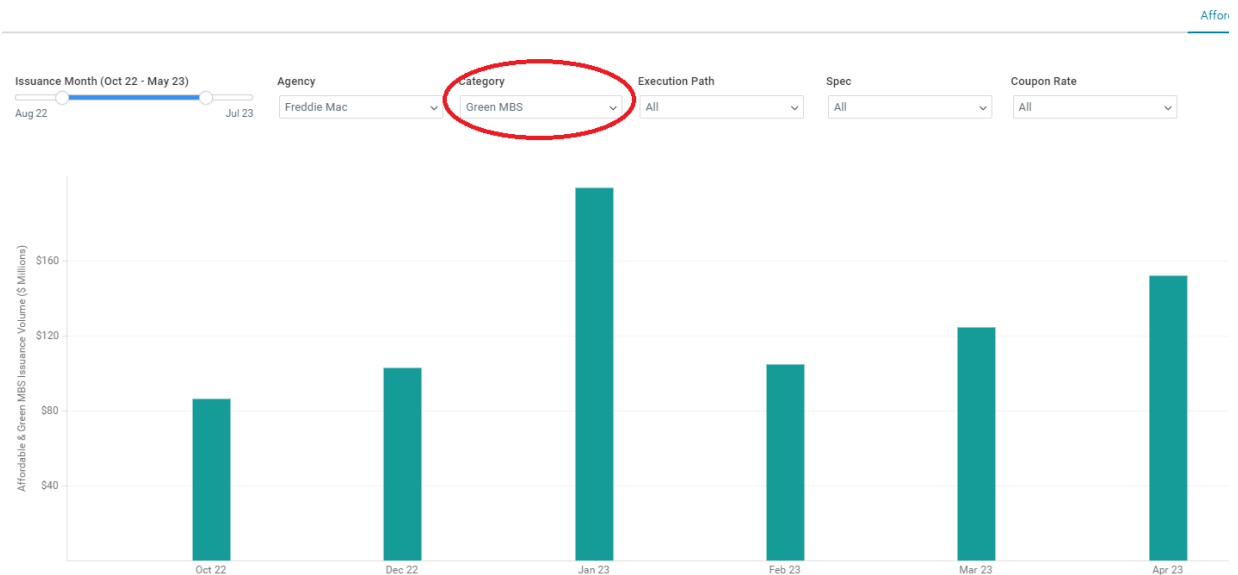
The Affordable & Green MBS Issuance Volume panel includes issuance numbers for both Freddie Mac and Fannie Mae, which can be toggled between using the Agency dropdown menu.



Note that these issuance numbers track the issuance for each agency's respective programs, which are similar in nature but have slight differences. Freddie Mac's low-income borrower program is called Home Possible, while Fannie Mae's is called Home Ready, for instance. These programs are rough equivalents, and thus are color-coded to be the same as the other agency's corresponding program.

Category

To select which specific programs are of interest and to just view issuance on those programs, select the desired programs under the category dropdown. The image below shows just Freddie Mac's Green MBS issuance.





This will display just the issuance volumes for the specified programs. Note that Freddie Mac and Fannie Mae have data on various refinance programs as well under these categories that currently do not have sufficient volume to be viewed but may be added to this menu in the future.

Execution Path

This menu allows you to select which execution path to view: cash, guarantor, or both. This corresponds to Freddie Mac and Fannie Mae's Cash Window execution, regular Guarantor execution, or both combined. Each program operates through these execution paths differently. Green MBS are currently only pooled internally through the Cash Window path, while the HFA mortgage programs are only accepted through the guarantor path. The image below shows the difference in Freddie Mac's issuance for the Cash and Guarantor paths.





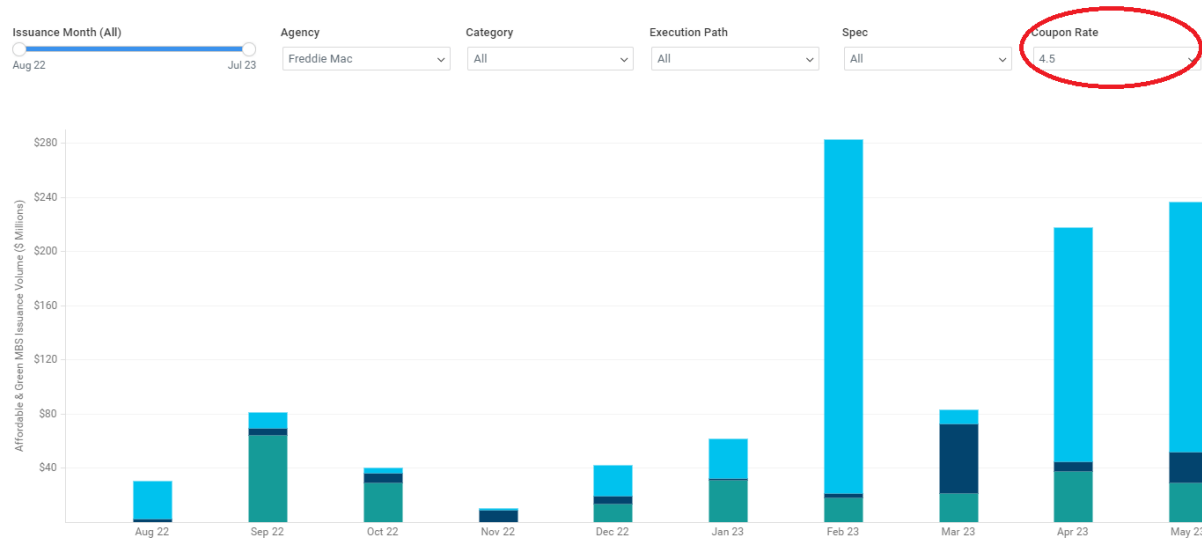
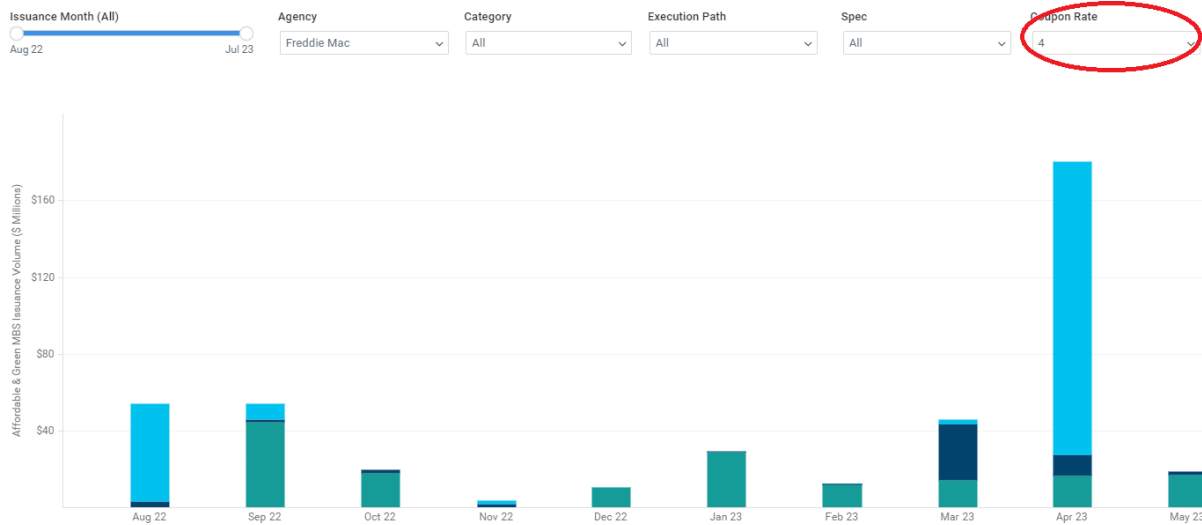
This dropdown menu allows you to specify if you would like to see issuance that falls under any specified, convexity-affecting story or not. You can choose to include specified pools only, non-specified pools only, or both combined. Below shows Freddie Mac's Spec Pool only issuance.



Note that very little to no green bond issuance for either of the GSEs is spec story eligible.

Coupon Rate

This dropdown menu allows you to specify the issuance of specific coupon rates available in the data. One or more of these rates can be selected at a given time; all rates available is the default option. The image below shows the difference between issuance for Freddie Mac of the 4% coupon rate and the 4.5% coupon rate.

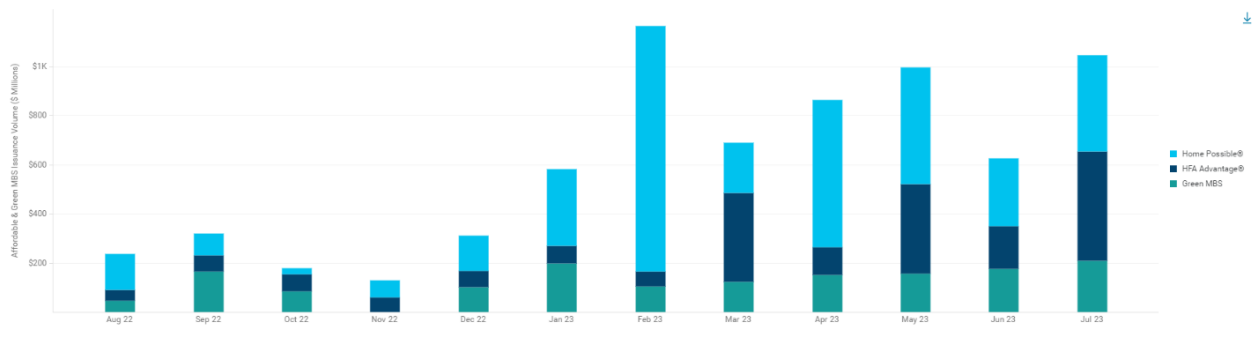


Table/Graph View

To switch between a table and graph visualization of the data, utilize the buttons to the right of the screen. The image below shows issuance for the latest data for Freddie Mac, and its table equivalent.



Issuance Month (All) Agency: Category: Execution Path: Spec: Coupon Rate:



Data as of 8/1/2023

Issuance Month (All) Agency: Category: Execution Path: Spec: Coupon Rate:



Affordable & Green Bond Volume (\$ Millions)

	Aug 22	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23
Green MBS	\$45,991	\$166,615	\$86,536	NA	\$102,929	\$198,867	\$104,701	\$124,784	\$152,324	\$157,864	\$177,561	\$209,246
HFA Advantage (R)	\$45,001	\$64,663	\$68,308	\$60,042	\$66,493	\$70,661	\$59,611	\$561,142	\$113,164	\$362,831	\$174,125	\$445,283
Home Possible (R)	\$145,922	\$89,481	\$23,491	\$70,891	\$141,755	\$313,412	\$999,898	\$205,060	\$597,950	\$474,606	\$273,285	\$392,266
TOTAL UPB	\$236,915	\$320,759	\$178,335	\$136,933	\$311,177	\$582,940	\$1,164,209	\$690,986	\$863,438	\$995,301	\$624,971	\$1,046,795



Appendix

Collection Day Counts for Factor Months in 2019 – 2024

Starting in January of 2021, the collection day logic changed to include Saturdays and holidays, resulting in higher counts.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2019	N/A	21	19	21	22	20	20	22	22	20	22	19
2020	21	21	19	22	22	20	22	23	21	21	21	23
2021	29	24	24	27	26	25	26	25	26	27	25	26
2022	28	25	24	28	25	26	28	24	27	26	25	26
2023	27	25	24	28	24	27	28	24	29	24	26	27
2024	26	26	26	27	26	28	24	27	28	24	28	25



This is not an offer to buy or sell any Freddie Mac securities. Offers for any given security are made only through applicable offering circulars and related supplements, which incorporate Freddie Mac's most recent Annual Report on Form 10-K filed with the Securities and Exchange Commission (SEC); all other reports Freddie Mac files with the SEC pursuant to Section 13(a) of the Securities Exchange Act of 1934 (Exchange Act), excluding any information "furnished" to the SEC on Form 8-K; and all documents that Freddie Mac files with the SEC pursuant to Sections 13(a), 13(c) or 14 of the Exchange Act, excluding any information "furnished" to the SEC on Form 8-K.

The financial and other information contained in this user guide and in the documents that may be accessed through this user guide speaks only as of the date of those documents. The information could be out of date and no longer accurate. Freddie Mac undertakes no obligation, and disclaims any duty, to update any of the information in those documents.

These materials may contain forward-looking statements. Forward-looking statements involve known and unknown risks and uncertainties, some of which are beyond the company's control. Management's expectations for the company's future necessarily involve a number of assumptions, judgments and estimates, and various factors could cause actual results to differ materially from the expectations expressed in these and other forward-looking statements. These assumptions, judgments, estimates and factors are discussed in the company's most recent Annual Report on Form 10-K, and its reports on Form 10-Q and Form 8-K, which are available on the Investor Relations page of the company's Web site at <http://www.freddiemac.com/investors> and the SEC's website at www.sec.gov. The company undertakes no obligation to update forward-looking statements it makes to reflect events or circumstances occurring after the date of this user guide.