Municipals Educational Series

Primer on Variable Rate Demand Obligations (VRDOs)

Primer

12 October 2023

Municipals
United States

Key takeaways

- VRDOs are long-term securities that are considered short-term because of their put features.
- VRDOs are not, and should not be confused with, Auction Rate Securities (ARS).
- While SIFMA is around 70% of 1-mo SOFR, on a taxable-equivalent basis, SIFMA may offer better rates.

Overview

We provide an overview of Variable Rate Demand Obligations (VRDOs) – long-term variable rate securities considered to be “short-term” because of their put feature. VRDOs are not, and should not be confused with, Auction Rate Securities (ARS).

We discuss the features of the VRDO micro market, such as the reasons to issue VRDOs. The primer also places issuance trends in a historical context and then offers a broad overview on the credit and/or liquidity facilities that largely determine VRDO ratings.

Exhibit 1: VRDOs compared to Floating Rate Notes (FRNs) and Auction Rate Securities (ARS)
VRDOs are not, and should not be confused with, ARS

	VRDOs	FRNs	ARS
Term	Up to three years	Up to seven years	Up to 30 years
Denominations	$100,000	$5,000	$25,000 (tax-exempt) $50,000 (taxable)
Interest rate period	Daily, weekly, monthly	Daily, weekly, monthly, quarterly or annually	7, 14, 28 or 35 days
Interest payment	Monthly or semiannually	Monthly or semiannually	Business day following the auction
Credit enhancement	Must have a liquidity facility	None	Typically insured
Remarketing	Remarketing agent	Broker-dealer	Broker-dealer
Tender or put	Yes	Yes, but only at the end of floating rate note period	No. Subject to mandatory purchase on conversion date to another mode
Redemption provisions	Callable at any interest payment date at par	Generally 3 to 6 months prior to maturity	Callable at any interest date at par
Failed remarketing	Put to bank Subject to bank rate	Hard put at maturity - default Soft put - maximum rate	Subject to maximum rate
Typical investors	Money market funds, bond funds, insurance companies, high-net-worth investors	Money market funds, bond funds, insurance companies, high-net-worth investors	Corporate investors, high-net-worth investors, bond funds and bank trust departments

Source: Municipal Securities Rulemaking Board

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What is a VRDO?

Variable Rate Demand Obligations (VRDOs) are long-term variable rate securities considered to be "short-term" because of their put, or tender, feature. A VRDO is not, and should not be confused with, an Auction Rate Security (ARS).

While both VRDOs and ARS are long-term instruments tied to short-term rates that trade at par, ARS do not have a put feature. Instead, ARS holders can only sell their security at an auction – provided there is a willing buyer.

To better distinguish VRDOs from ARS and Floating Rate Notes (FRNs), we can turn to the Municipal Securities Rulemaking Board's (MSRB) high-level breakdown of the differences between the products. As Exhibit 1 on the front page shows, VRDOs have the highest minimum denomination at $100,000.

VRDOs and the SIFMA Municipal Swap Index

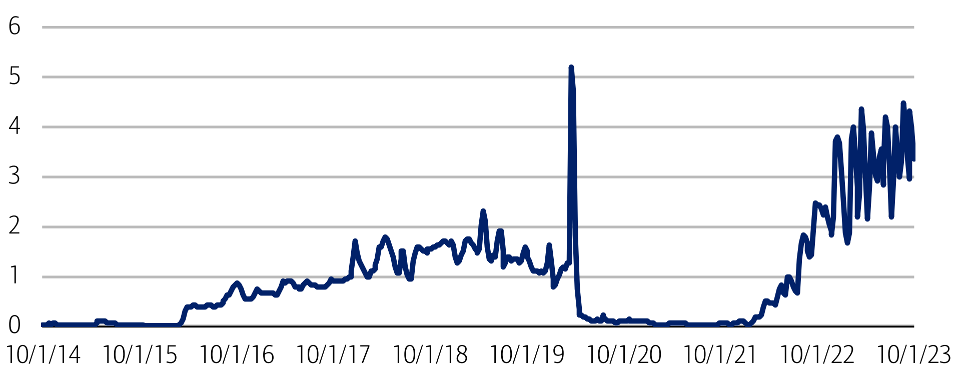
The SIFMA (Securities Industry and Financial Markets Association) index is derived from the remarketing of individual VRDOs and not a pricing basis itself. Remarketing rates for qualifying VRDOs are aggregated to form the index. The index itself is not the basis of the remarketing rate. Rather, the rate is the result of the individual features of each VRDO, with reference to market expectations and prior relationships. According to SIFMA, the index is "a 7-day high-grade market index comprised of tax-exempt [VRDO] reset rates" with the following characteristics:

- "Be a weekly reset, effective on Wednesday (no lag resets considered);
- Not subject to Alternative Minimum Tax;
- Have an outstanding amount of $10mn or more;
- Have the highest short-term rating [VMIG 1 by Moody's or A-1+ by S&P];
- Pay interest on a monthly basis, calculated on an actual/actual basis; and
- Reset rate must have been reported to the MSRB's SHORT system by 3:15 p.m. Eastern time on the day the Index is calculated."

Bloomberg publishes the rates each Wednesday at 4:00 pm Eastern.

As Exhibit 2 shows, for years SIFMA was below 0.15% while the Fed kept Fed Funds close to zero. In mid-2016, however, SIFMA rates began to rise as money market reform measures began going into effect. It also shows that, come tax time each year, rates have a tendency to rise as holders liquidate their positions to pay tax liabilities.

Exhibit 2: SIFMA Municipal Swap Index (%) as of 4 October 2023
SIFMA spiked to 5.2% at the beginning of the pandemic; recent rise and volatility driven by Fed hikes



Source: Bloomberg

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Additionally, Exhibit 2 shows that SIFMA reset at 5.2% at the onset of the pandemic as liquidity at the shortest end of the curve dried up, but reset much lower by the end of April as the Federal Reserve stepped in to restore orderly functioning of the market. More recently, however, it shows increased volatility and a choppy rise of SIFMA resets to a recent high of 4.47% as of 23 August associated with the Fed's tightening cycle. Indeed, since the end of 2022, the average weekly change in SIFMA is 75bp. SIFMA reset to 3.36% as of 4 October.

VRDO micro market: reasons to issue VRDOs

As a result of investor preferences for short-term paper and the shortage of note issuance, the muni term structure has historically been upward sloping. That shape enabled issuers to exploit the yield curve by selling short duration instruments such as VRDOs. Issuers could also manage the duration of their liabilities. For example, an issuer can match its floating rates assets with its floating rates liabilities. Another motivation would simply be to diversify an issuer's debt portfolio by attracting a unique investor base.

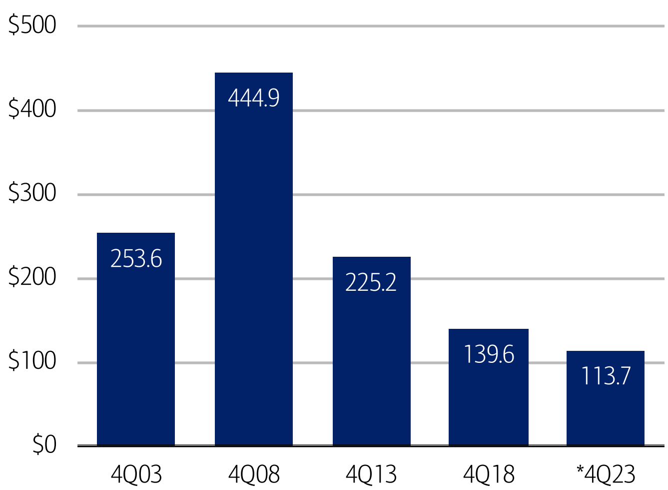
Current state of the VRDO market

VRDOs reached their peak alongside the fall of the ARS market

The VRDO market reached its peak of $444.9bn during the *Great Recession*, largely at the expense of the significant amounts of failed auctions and the all-but-collapse of the ARS market. As of 9 October 2023, roughly $113.7bn of VRDOs remained outstanding, down 74% from its peak. The ARS market, too, is a fraction of the size it once was, with just $4.0bn outstanding as of 9 October 2023.

As it stands, three states account for 41% of outstanding VRDOs: New York ($22.4bn), California ($12.3bn) and Texas ($12.1bn). See Exhibit 4.

Exhibit 3: VRDOs outstanding ($bn)
Current outstanding volume of VRDOs are $113.7bn, 74% below peak



Note: *As of 9 October 2023.
Source: BofA Global Research, SIFMA, Bloomberg

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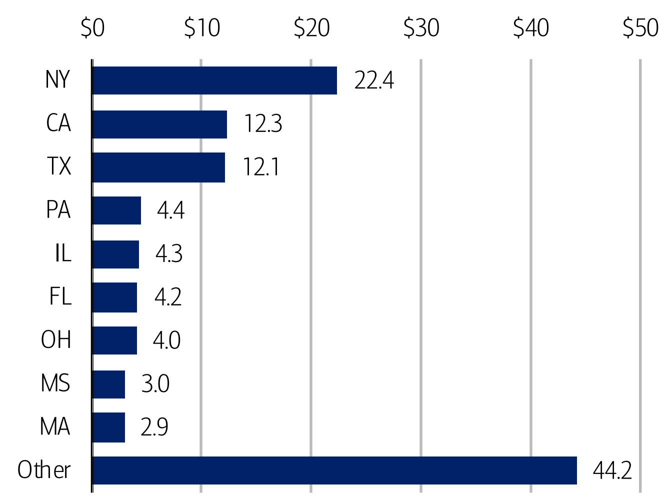
Exhibit 4: Outstanding VRDOs by state ($bn)
NY, CA and TX account for 41% of outstanding VRDOs



Note: As of 9 October 2023.
Source: BofA Global Research, Bloomberg

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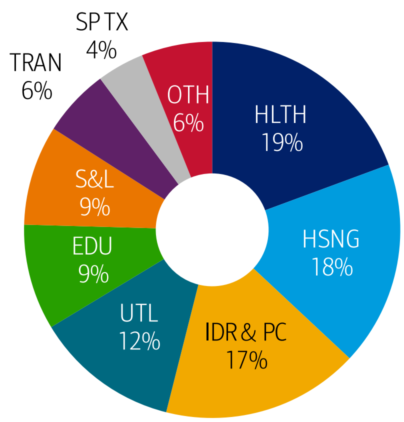
Meanwhile, the Health care and Housing sectors account for the largest shares of VRDOs, representing 37% of the total VRDO market. The Industrial Development Revenue and Pollution Control sectors, when combined, account for almost 17% of VRDOs outstanding. See Exhibit 5. And, similar to the muni market more broadly, the vast majority of VRDOs are tax-exempt. See Exhibit 6.

Exhibit 5: Sector VRDOs as % of total VRDOs outstanding
Health care and Housing are the largest outstanding sectors



Note: As of 9 October 2023. HLTH is Health care; HSNG is Housing; IDR &PC is Industrial Development Revenue and Pollution Control; UTL is Utilities; EDU is Education; S&L is State and Local; TRAN is Transportation; SP TX is Special Tax; OTH is Other.
Source: Bloomberg

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Exhibit 6: VRDOs outstanding, by tax status ($mn)
Most VRDOs are federally tax-exempt

Tax status	Amt. outstanding
Federally & state tax-exempt	68,469.1
AMT/state tax-exempt	12,939.9
Federally tax-exempt	14,993.4
AMT	3,962.7
Federally taxable/state tax-exempt	5,618.2
Federally tax-exempt/state taxable	5,061.9
Federally taxable	952.6
Federally & state taxable	1,216.3
AMT/state taxable	382.4
BQ/state tax-exempt	81.4
BQ/state taxable	27.2
BQ	7.9
NA	19.2
Total	**113,732.3**

Note: Data as of 9 October 2023. BQ = Bank Qualified. AMT = Alternative Minimum Tax.
Source: Bloomberg

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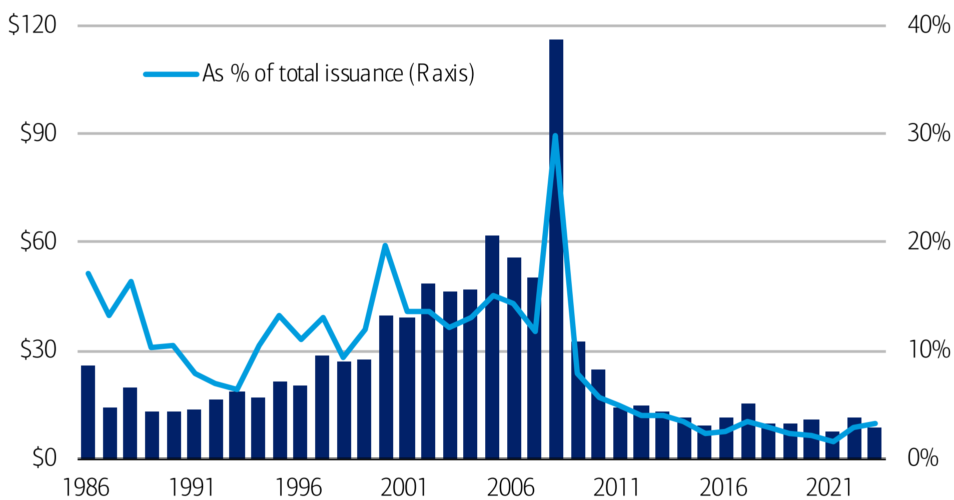
VRDO market may continue its decline

The VRDO market may continue its decline, partially due to uncertainty in the rates markets. Yet, the market's decline is also the result of SEC rules that imposed liquidity fees, redemption gates and a floating net asset value on some money market funds. The latter resulted in the size of tax-exempt money market funds dwindling, which reduced demand from those funds that were previously the dominant buyers of VRDOs. At this point, the marginal buyers of VRDOs appear to be individuals.

Exhibit 7: Annual variable rate, short put, issuance ($bn)
Issuance declined dramatically following the financial crisis and, through Sep-23, totaled just $8.8bn YTD



Note: 2023 data through September 2023.
Source: Bond Buyer

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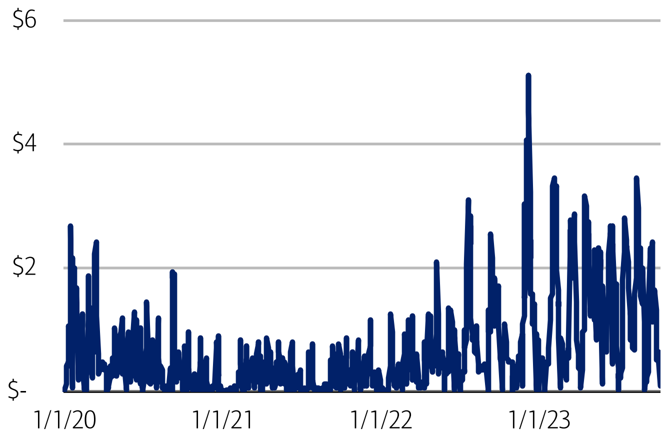
Bank demand for direct purchases of floating rate securities over the last several years also contributed to the decline in publicly-placed VRDOs. More broadly, the drop in C-corporation taxes with the 2017 Tax Cuts and Jobs Act and the 15% corporate AMT enacted as part of the Inflation Reduction Act both reduced the attractiveness of tax-exempt instruments for banks, including bank placements, although it is a matter of degree.

Pricing anomalies

VRDOs are tax inefficient and technically-driven, which has proven to be a good combination for investors. Tax season typically sees dealer inventories surge and fall with rates mirroring this move. The taxable floating rate index, 1-month SOFR (or 1-month Libor historically), tends to adjust gradually to Fed expectations while SIFMA's gyrations tend to be much more volatile. That said, since 2000, SIFMA has averaged around 70% of 1-month Libor (SOFR). Yet, on a tax-adjusted basis, SIFMA may offer better rates: Exhibit 9 below right, shows the spread of tax-adjusted SIFMA rates to 1-month SOFR rates. It shows that tax-adjusted SIFMA rates were on average positive to 1-month SOFR since 2019. The spread of tax-adjusted SIFMA to SOFR has been volatile since 3Q22, averaging 100bp for the year-to-date 2023.

Exhibit 8: Daily BOOM inventory index levels ($bn)
BOOM index shows inventory as of 9 October 2023 below one-year average



Source: Bloomberg

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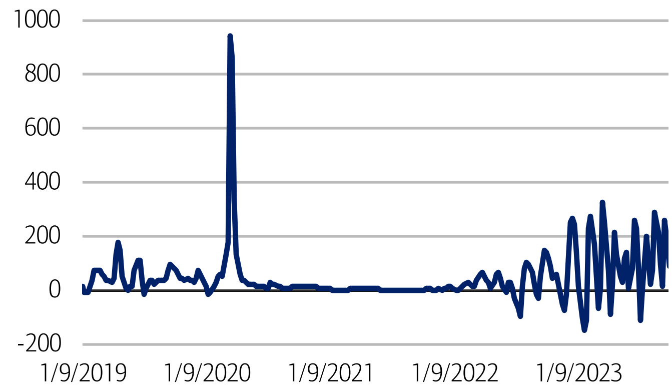
Exhibit 9: Taxable-equivalent SIFMA spread to 1-mo SOFR (bp)
In 2023, taxable-equivalent SIFMA rates are on avg 100bp above 1-mo SOFR



Note: Data as of 4 October 2023. Note: the taxable-equivalent yield on the SIFMA Swap Index uses a generic state tax rate of 5.0% and federal rate of 37% + the 3.8% Medicare surtax.
Source: BofA Global Research, Bloomberg

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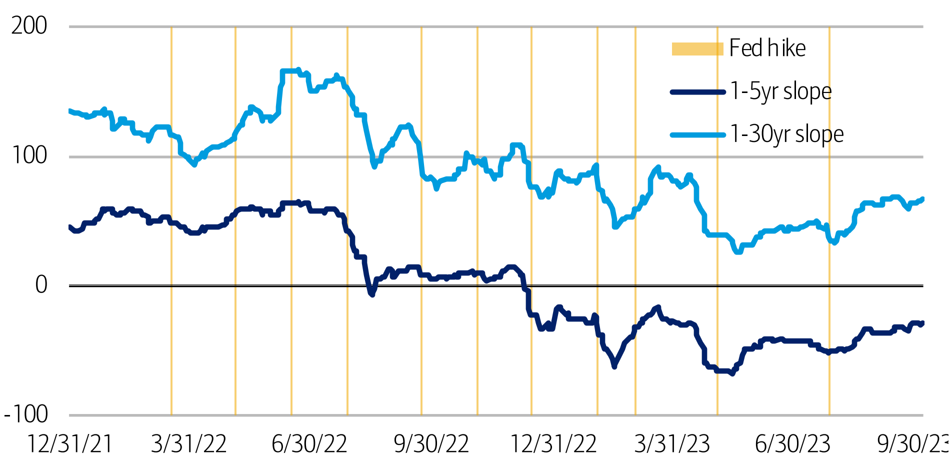
Exhibit 10 below shows how the Federal Reserve's rate hikes affected the muni curve: as expected, the muni curve has flattened despite some initial steepening (early steepening signaling the market's view on high inflation and the Fed being "behind the curve"). We anticipate that the curve will continue to flatten for some time after the Fed's tightening cycle ends, driven by the long end, before steepening as the Fed embarks on an easing cycle, driven by the front end of the curve.

Exhibit 10: 1-5yr and 1-30yr AAA GO curve slopes during Fed's tightening (bp)
As expected, the muni curve flattened as the Fed's tightening cycle persists



Source: BofA Global Research, Refinitiv

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VRDO ratings

VRDO ratings depend on the measure of credit substitution. Most VRDOs are supported by letters of credit (LOCs). This provides for complete credit substitution, supplying both credit and liquidity protection. In contrast, VRDOs supported by standby bond purchase agreements (SBPAs) provide only liquidity protection.

Letters of credit (LOCs)

Unrated borrowers will generally use LOC structures. The ratings on those VRDOs will generally be based on the long- and short-term rating of the provider of the letter of credit. For example, if an A1/P-1 (long-term/short-term) Moody's-rated bank were to issue an LOC, the rating on the bond would reflect its long-term and short-term ratings of A1/P-1.

A rated borrower may still choose to have LOC support. In this case, the long-term rating may be based on a joint default analysis which recognizes the dual support of both the LOC provider and the issuer itself. These ratings are typically higher than the rating of the LOC provider or the issuer itself because two payment sources decrease the likelihood of default.

LOCs are unconditional and irrevocable, and they provide for both credit and liquidity support. In this situation, when looking at the creditworthiness of the transaction, investors' primary focus should be on the bank's creditworthiness rather than the underlying borrower's.

Here, the bank – not the borrower – makes the payments of either interest or principal plus accrued interest to bondholders to the extent there is a failed remarketing. The borrower is generally responsible for repaying the bank at a negotiated, agreed-upon rate. The LOC will not expire or terminate prior to a final payment made to bondholders.

Standby bond purchase agreements (SBPAs)

A rated borrower – usually in the single-A rated category or higher – may also choose to use an SBPA structure. Here, the SBPA is only providing liquidity support. Consequently, the long-term rating is based on the borrower's rating, and the short-term rating is based on the facility provider's short-term rating.

Unlike unconditional LOCs, SBPAs are conditional, liquidity-only support agreements that do not cover regularly scheduled payments of principal and interest. Generally, it is a lower, more cost-effective alternative for an issuer. Stronger borrowers are the most prevalent user of this type of facility. Here, the assessment of creditworthiness is focused on both the provider of the SBPA and the underlying borrower.

SBPAs can terminate prior to a final takeout of bondholders – and therefore the SBPA-provider would no longer be required contractually to provide liquidity support (purchase the bonds) – but only under severe credit events. While not-as-severe events, like the substitution of the liquidity provider, change in rate mode, or others that are "notice-designated" would still require the provider to provide liquidity support, the more severe events, such as those Moody's identifies below, may result in the automatic termination of the SBPA.

Exhibit 11: Automatic termination events under SBPAs
Only the most severe credit events allow for termination without a takeout of bondholders

1. A borrower payment default on the SBPA-supported or similarly-secured debt
2. The bankruptcy/insolvency of the borrower
3. Downgrade of the borrower's long-term rating below investment grade by each rating agency then rating the bonds
4. The nonpayment of a legal judgment by the borrower
5. A ruling by a court that the bonds – or certain key documents or provisions related to the security or payment of the bonds – are invalid

Source: Moody's Investors Service

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Self-liquidity

Here, we are only concerned about the creditworthiness of the borrower. In these situations, the borrower – usually a very high grade one at that – has substantial enough on-balance sheet liquidity that can be accessed and liquidated to enable it to fund purchases of VRDOs to the extent of a failed remarketing.

Risks: Optional and mandatory takeouts

What if the credit/liquidity facility expires or terminates?

As per the MSRB, rollover/renewal/substitution *risk* is the "risk of the inability to obtain a suitable liquidity bank facility at an acceptable price to replace a facility upon termination or expiration of the contract period." In other words, when the letter of credit (LOC) from Provider A is expiring or terminating, there is a risk that the borrower will be unable to either extend the agreement with Provider A or substitute it with an LOC from Provider B. We should note, however, that under both LOC- and SBPA-backed transactions, upon the substitution (a "noticed" termination event for an SBPA-backed transaction as opposed to an automatic termination event), there will be some form of mandatory tender or redemption of the bonds prior to the expiration or termination of the LOC or SBPA.

Events that lead to a mandatory takeout of bondholders

We briefly noted above that, upon a substitution of an LOC or SBPA provider, bondholders face either a mandatory tender or redemption. That is not the only event upon which such a mandatory takeout will occur and others include:

- The expiration of the LOC or SBPA
- A conversion of the rate mode, usually to a rate mode other than a daily or weekly mode (such as a fixed rate, commercial paper rate or RFLOATs rate)
- An event of default under a reimbursement agreement (as under an LOC-backed transaction) or under an SBPA

Note that the mandatory tender or redemption (or even acceleration under certain events) occur prior to the expiration or termination of the currently-in-place LOC or SBPA, funded from a draw on the applicable facility.

Optional tenders: the right to put the bonds to the remarketing agent

One of the key features of a VRDO is the right for the bondholder to tender their bonds to the remarketing agent for a price of par plus accrued interest. While that right is generally unrestricted, there are some notice requirements that investors should be aware of.

Let's say a bondholder's bond is currently in a weekly rate mode, meaning the interest rate on the bonds is reset weekly. Normally, a bondholder wishing to tender his or her bond must do so by delivering written notice to the tender agent and/or remarketing agent at least 7 calendar days prior to the purchase date. In a daily rate mode, the bondholder must normally give notice by a certain time (i.e. 10:00 am) on the actual tender date.

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