

City of Houston, Texas
Quarterly Swap Agreements Disclosure
March 31, 2019

Combined Utility System Swaps

General Terms:

Objective. The objective of the swaps is to hedge against the potential of rising interest rates associated with the Bonds and to achieve a lower fixed rate than the market rate for traditional fixed rate debt at time of issuance.

Credit risk. As of this date, the City was not exposed to credit risk because the swaps had a negative fair value. However, should interest rates change and the fair value of the swaps become positive, the City would be exposed to credit risk on the swaps in the amount of its fair value. If a counterparty's credit rating falls below rating thresholds established by the agreements, collateral must be posted in varying amounts depending on the credit rating and swap fair value. No collateral has been required to date.

Basis risk. The City will be exposed to basis risk on the swap because the variable payment received is based on a taxable index other than the tax-exempt SIFMA based rate paid by the City on the bonds. In the future, if tax-exempt rates move to convergence with the taxable LIBOR index (because of reductions in tax rates, for example), the expected cost savings may not be realized, resulting in a higher synthetic rate.

Termination risk. The City may terminate for any reason. A counterparty may terminate a swap if the City fails to perform under the terms of the contract. The City's ongoing payment obligations under the swap (and to a limited extent, its termination payment obligations) are insured, and counterparties cannot terminate so long as the insurer does not fail to perform. If a swap is terminated, the associated variable-rate bonds would no longer carry synthetic fixed interest rates. Also, if at the time of the termination the swap has a negative fair value, the City would be liable to the counterparty for a payment equal to the swap's fair value.

Remarketing risk. The City faces a risk that the remarketing agent will not be able to sell the variable rate demand bonds at a competitive rate each week.

A. Combined Utility System Synthetic Fixed Rate Swap

On September 10, 2004, the City entered into three pay-fixed, receive-variable rate swap agreements ("the 2004B Swaps") related to the Combined Utility System 2004B auction rate variable interest bonds ("the 2004B Bonds"). The City pre-qualified six firms to submit competitive bids on the swaps. The three firms selected all matched the lowest fixed rate bid of 3.78%. As of August 15, 2012, the City had converted all the 2004B bonds from auction rate to variable rate demand bonds ("the 2004B bonds") and SIFMA-Index notes ("the 2012A and 2012B Refunding Bonds"), collectively referred to herein as the "Bonds." On June 1, 2017, the City remarketed the 2012B Bonds changing the index from SIFMA-Index to 70% of One-Month US Dollar Libor plus 48.5 basis points. On June 27, 2018, due to tax reform, the City remarketed the 2012B Bonds to variable rate demand bonds.

Terms. The notional amounts of the swap agreements total \$653.3 million, the principal amount of the associated Bonds. The City's swap agreements contain scheduled reductions to outstanding notional amounts that follow anticipated payments of principal of the Bonds in varying amounts during the years 2028 to 2034.

Under the terms of the swaps, the City will pay a fixed rate of 3.78% and receive a floating rate equal to 57.6% of One-Month US Dollar LIBOR plus 37 basis points. All agreements were effective September 10, 2004 - the original date of issuance of the Bonds. The termination date is May 15, 2034.

On November 15, 2018, the City amended the floating rate received to 58.55% of the ten-year USD-CMS rate.

On November 7, 2016, UBS AG novated \$150,000,000 notional amount to Wells Fargo Bank, N.A.

Receipts and Payments. For the nine months ended March 31, 2019, the City received \$8,359,792 in swap revenue for these swaps and paid \$7,382,568 of interest on the underlying securities. The contractual rate for the City's swap payment is 3.78%. The average effective rate for the 2004B bonds, including interest for the Series 2004B bonds, the City's swap payments, and its dealer and liquidity fees, reduced by swap receipts, was 4.17%. In contrast, the comparable fixed rate the City paid on its Combined Utility System Series 2004A bonds was 5.08%.

Fair value. Because interest rates have changed, the swaps had an estimated negative fair value of \$160 million on March 31, 2019. This value was calculated using the zero-coupon method.

Counterparty	Notional Amount	Fair Value	Counterparty Credit Rating (Moody's/S&P/Fitch)
Goldman Sachs Capital Markets Inc.	\$ 353,325,000	\$ (86,176,159)	NR /A+ /A+
JP Morgan Chase	150,000,000	(36,585,081)	Aa3/ A+/AA-
Wells Fargo	150,000,000	(37,117,631)	Aa2 /AA-/AA
	<u>\$ 653,325,000</u>	<u>\$ (159,878,871)</u>	

B. Combined Utility System Forward Rate Lock/Synthetic Fixed Rate Swap

On November 1, 2005, the City priced a floating to fixed interest rate exchange agreement swap with Royal Bank of Canada ("RBC") on a forward basis. The City pre-qualified eight firms to submit competitive bids, and RBC submitted the lowest bid of 3.761%. The addition of the SIFMA-Indexed Notes diversifies the System's variable rate debt portfolio. This swap was previously assigned to the 2008A variable rate demand bonds and the 2010B SIFMA Indexed Notes. Later, 2012C SIFMA Indexed Notes refunded 2010 SIFMA Indexed Notes. On August 1, 2016, the City refunded 2012C SIFMA Index Notes to CUS 2016C Libor Index. On August 1, 2018, the City refunded 2016C to CUS 2018C. The new rate on the note is calculated at 70% of One-Month US Dollar LIBOR plus 36 basis points.

Terms. The notional amount of the swap is \$249.1 million with the underlying bonds being the Series 2018C Notes. The swap agreement contains scheduled reductions to the outstanding notional amount during the years 2028 to 2034.

Under terms of the swap, the City pays a fixed rate of 3.761% and receives a floating rate equal to 70% of One-Month US Dollar LIBOR. The agreement became effective March 3, 2007, with a termination date of May 15, 2034. On September 19, 2015, Royal Bank of Canada (RBC) novated \$249,075,000 notional amount to Wells Fargo. On November 15, 2018, the City amended the floating rate received to 58.55% of the ten-year USD-CMS rate.

Receipts and Payments. For nine months ended March 31, 2019, the City received \$3,016,643 in swap revenue for its 2018C swap and paid \$3,717,079 on the underlying notes. The contractual rate for the City's swap payment is 3.761%. The average effective rate for the bonds, including the City's swap payments and a fixed component, reduced by swap receipts was 4.13%.

Fair value. Because interest rates have changed, the swap had an estimated negative fair value of \$61 million on March 31, 2019. This value was calculated using the zero-coupon method.