

# CALCULATION METHODOLOGY FOR FALLBACK RATE (SOR)



**ABS Benchmarks Administration Co. Pte Ltd**

[absCo@abs.org.sg](mailto:absCo@abs.org.sg)

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## Calculation Methodology for Fallback Rate (SOR)

<p><b>Description</b></p>	<p>The synthetic rate for deposits in Singapore Dollar (SGD), which represents the effective cost of borrowing the SGD synthetically by borrowing U.S. Dollar (USD) for the same maturity, and swapping out the USD in return for the SGD.</p> <p>Overnight Fallback Rate (SOR) is based on actual transactions in the USD/SGD FX swap market and the Secured Overnight Financing Rate (SOFR) published by the Federal Reserve Bank of New York.</p> <p>1-month, 3-month and 6-month Fallback Rates (SOR) are based on actual transactions in the USD/SGD FX swap market and a USD interest rate calculated pursuant to contractual fallbacks for USD LIBOR in the 2006 ISDA Definitions updated July 2020 (i.e. term adjusted SOFR plus the Spread Adjustment, and known as Fallback Rate (SOFR)).</p> <p>Fallback Rates (SOR) are published in arrears, following after the publishing of the relevant USD interest rate inputs by the Federal Reserve Bank of New York and by Bloomberg. Fallback Rates (SOR) will be published for each Original SOR Rate Record Day i.e.</p> <ul style="list-style-type: none"> <li>• for every Singapore, London and New York Business Day on which an Overnight SOR would have been published with respect to an Overnight Fallback Rate (SOR); and</li> <li>• for every Singapore and London Business Day on which a 1-month, 3-month and 6-month SOR would have been published with respect to 1-month, 3-month and 6-month Fallback Rates (SOR).</li> </ul> <p>Each Fallback Rate (SOR) published will be tagged to a unique Original SOR Rate Record Day.</p>
<p><b>Calculation Methodology</b></p>	<p>The Administrator shall calculate and determine the Fallback Rate (SOR), for each maturity matching each Tenor specified below (each a “calculation period”), on each Business Day as follows:</p> <p><b>FALLBACK RATE (SOR) =</b></p> $\left\{ \left[ \left( \frac{\text{Spot Rate} + \text{Forward Points}}{\text{Spot Rate}} \right) \times \left( 1 + \frac{\text{USD Rate} \times \text{\#days}}{360} \right) \right] - 1 \right\} \times \frac{365}{\text{\# days}} \times 100$ <p>Where:</p> <p><b>USD Rate</b> means</p> <ul style="list-style-type: none"> <li>• For the overnight tenor, the latest available SOFR as published by Federal Reserve Bank of New York at around 8:00am, New York time, one Singapore Business Day following the Original SOR Rate Record Day; and</li> <li>• For the 1-month, 3-month and 6-month tenors, the “all in” fallback rate i.e. Fallback Rate (SOFR), which is the compounding of SOFR over the relevant</li> </ul>

period and an accompanying Spread Adjustment, as published on Bloomberg Screen <FBAK><GO> with the Original IBOR Rate Record Day<sup>1</sup> matching the Original SOR Rate Record Day. If such rate is unavailable, the “all in” fallback rate for the latest Original IBOR Rate Record Day shall be used.

**#days** means the actual number of days in the calculation period.

**Spot Rate** means, in relation to all Qualifying Transactions, the volume weighted average rate calculated as follows:

$$\frac{\sum(\text{SGD Principal}_i * \text{Spot Rate}_i)}{\text{SGD Aggregate Principal}}$$

**SGD Principal<sub>i</sub>** means, in relation to a Qualifying Transaction, the notional amount of that Qualifying Transaction.

**SGD Aggregate Principal** means the aggregate notional amounts of all Qualifying Transactions.

**Spot Rate<sub>i</sub>** means, in relation to a Qualifying Transaction, the spot rate (or currency exchange rate) for the near leg of that Qualifying Transaction.

**Forward Points** means, in relation to all Qualifying Transactions, the volume weighted average rate calculated as follows:

$$\frac{\sum(\text{SGD Principal}_i * \text{Forward Point}_i)}{\text{SGD Aggregate Principal}}$$

**SGD Principal<sub>i</sub>** means, in relation to a Qualifying Transaction, the notional amount of that Qualifying Transaction.

**SGD Aggregate Principal** means the aggregate notional amounts of all Qualifying Transactions.

**Forward Point<sub>i</sub>** means, in relation to a Qualifying Transaction, the difference between the spot rate (or currency exchange rate) for the near leg and the forward rate (or currency exchange rate) for the far leg of that Qualifying Transaction.

*Please refer to Annex B below for an illustration of the calculation of 6-month “Spot Rate”, “Forward Points” and “Fallback Rate (SOR)”.*

<sup>1</sup> “Original IBOR Rate Record Day” refers to every London Business Day on which a 1-month, 3-month or 6-month USD LIBOR would have been published.

<b>Qualifying Transactions</b>	Any Type of Trade on the Original SOR Rate Record Day which satisfies all of the following conditions: <ul style="list-style-type: none"> <li>(a) having a notional amount equal to or exceeding the Minimum Notional;</li> <li>(b) with at least one counterparty in Singapore;</li> <li>(c) electronically routed and captured through a Reporting Broker<sup>2</sup>;</li> <li>(d) traded during the Qualifying Window;</li> <li>(e) with maturities matching the Tenors specified below; and</li> <li>(f) traded between interbank counterparties.</li> </ul>
<b>Type of Trades</b>	USD/SGD FX Swaps (with maturities matching the Tenors specified below)
<b>Qualifying Window</b>	USD/SGD FX Swaps that are booked daily from 7:30:00am to 4:29:59pm, Singapore time on the Original SOR Rate Record Day.
<b>Minimum Notional</b>	USD 1,000,000
<b>Tenors</b>	Overnight, 1 month, 3 months and 6 months
<b>Day Count</b>	SGD – Actual/365 USD – Actual/360
<b>No. of Decimal Points</b>	Fallback Rate (SOR): 5 decimal places, round to nearest SGD Spot Rate: 4 decimal places, round to nearest Forward Points: 6 decimal places, round to nearest
<b>Day/Time of Benchmark Publication</b>  <i>Please refer to Annex C for more details on Fallback Rate (SOR) publication schedule.</i>	<p>Fallback Rates (SOR) will be published in arrears for every <u>Original SOR Rate Record Day</u> i.e.</p> <ul style="list-style-type: none"> <li>• for every Singapore, London and New York Business Day on which an Overnight SOR would have been published with respect to an Overnight Fallback Rate (SOR); and</li> <li>• for every Singapore and London Business Day on which a 1-month, 3-month and 6-month SOR would have been published with respect to 1-month, 3-month and 6-month Fallback Rates (SOR).</li> </ul> <p><u>Fallback Rate (SOR) will be published on Singapore Business Days<sup>3</sup>.</u></p> <p>In addition to the Fallback Rate (SOR), the Forward Points and Spot Rate, for each tenor will also be published.</p> <p><u>Publication Time</u> Spot Rate: 4:45pm, Singapore time, on the day of the USD/SGD FX swap transactions (i.e. Original SOR Rate Record Day) as published</p>

<sup>2</sup> A “Reporting Broker” refers to an inter-dealer broker that has been selected by ABS Co. to provide information on Qualifying Transactions and listed on ABS Co.’s directory:  
[https://abs.org.sg/docs/library/panel\\_abs\\_sgd\\_sibor\\_sor\\_11012021.pdf](https://abs.org.sg/docs/library/panel_abs_sgd_sibor_sor_11012021.pdf).

<sup>3</sup> While multiple Fallback Rates (SOR) for the same tenor may be published on the same day, each Fallback Rate (SOR) will be tagged to a unique Original SOR Rate Record Day. Likewise, there could also be good Singapore Business Days where no Fallback Rate (SOR) will be published.

	<p>on Reuters screen &lt;ABSFIX01&gt; under the heading “SGD Reference”</p> <p>Forward Points: 4:45pm, Singapore time, on the day of the USD/SGD FX swap transactions (i.e. Original SOR Rate Record Day) as published on Reuters screen &lt;ABSFIX01&gt; under the heading “SGD Fwd Pts”</p> <p>Fallback Rate (SOR): Prior to or at 9:15am, New York Time (9:15pm or 10:15pm, Singapore time) Overnight, 1-month, 3-month and 6-month Fallback Rates (SOR) will be published respectively 1-day and approximately 1-month, 3-month, and 6-month in arrears.</p> <p><i>Annex A provides the general approach adopted in the Fallback Rates (SOR) publication and examples to demonstrate how the publication date for a 6-month Fallback Rate (SOR) is determined with respect to conventional SOR Interest Rate Swap (IRS) period end dates.</i></p>
<p><b>Fallback Rate (SOR) Publication Page</b></p>	<p>Refinitiv - FBKSORFIX, Bloomberg - ABSI</p>
<p><b>Corrections to Rate</b></p> <p><i>Please refer to Annex D for more details on Fallback Rate (SOR) Restatement/Re-fix Policy.</i></p>	<p>Any correction to the Forward Points and Spot Rate must be published within 90 minutes following the Publication Time, on the day of the USD/SGD FX swap transactions (i.e. Original SOR Rate Record Day).</p> <p>Any correction to the Fallback Rate (SOR) will be published at 9:00am Singapore time on the following day.</p>
<p><b>Methodological Fallback (No qualifying USD/SGD FX swaps transactional data for VWAP calculation)</b></p> <p><i>Note: The publication of the Rate for the preceding Business Day is a calculation methodology fallback procedure to address periods where USD/SGD FX swaps transactional data may not be available, and is not intended to invoke any contractual fallback in transactions between counterparties that reference the Fallback Rate (SOR) as the Fallback Rate (SOR) is still published.</i></p>	<p><b>Methodological Fallback Trigger:</b> In respect of any tenor, a Methodological Fallback Trigger occurs if there is no Qualifying Transaction traded during the Qualifying Window.</p> <p><b>Methodological Fallback Procedure:</b></p> <ol style="list-style-type: none"> <li>1. If the Methodological Fallback Trigger occurs in respect of any tenor, the Fallback Rate (SOR) for that tenor for the preceding Business Day shall be published.</li> <li>2. The Methodological Fallback Procedure in Paragraph 1 above can be invoked for a maximum of 2 consecutive Business Days.</li> <li>3. If the Methodological Fallback Trigger continues to occur on the 3<sup>rd</sup> consecutive Business Day, the Administrator shall calculate a substitute rate for that tenor as follows:</li> </ol> <p><b>A - B</b></p> <p>Where:</p>

“**A**” means a rate equal to Compounded Singapore Overnight Rate Average (SORA) (published on the 3<sup>rd</sup>, 4<sup>th</sup> or 5<sup>th</sup> consecutive Business Day of the Methodological Fallback Trigger respectively) for an equivalent tenor, provided that “A” means SORA for the purposes of calculating a substitute rate for Overnight Fallback Rate (SOR).

“**B**” means a rate equal to Compounded SORA minus Fallback Rate (SOR) (both as previously published on the Business Day preceding the day the Methodological Fallback Trigger first occurred).

Tenor	Compounded SORA – Fallback Rate (SOR) Spread
Fallback Rate (SOR) ON*	SORA – Fallback Rate (SOR) ON
Fallback Rate (SOR) 1M	Compounded SORA 1M – Fallback Rate (SOR) 1M
Fallback Rate (SOR) 3M	Compounded SORA 3M – Fallback Rate (SOR) 3M
Fallback Rate (SOR) 6M	Compounded SORA 6M – Fallback Rate (SOR) 6M

\* SORA will be used to calculate the substitute rate for Fallback Rate (SOR) ON.

- The Methodological Fallback Procedure in Paragraph 3 above can be invoked for a maximum of 3 consecutive Business Days.

**Methodological Fallback (Permanent Discontinuation of USD Rate)**

*Note: The publication of the Rate for the preceding Business Day is a calculation methodology fallback procedure to address periods where the Fallback Rate (SOFR) is not available permanently, and is not intended to invoke any contractual fallback in transactions between counterparties that reference the Fallback Rate (SOR) as the Fallback Rate (SOR) is still published*

**USD Rate in the event of a permanent discontinuation of Fallback Rate (SOFR):**

Pursuant to the Supplement to the 2006 ISDA Definitions dealing with the permanent discontinuation of the Fallback Rates, upon the occurrence of a Fallback Index Cessation Event with respect to Fallback Rate (SOFR), ABS Co. shall seek to incorporate the fallback rate for Fallback Rate (SOFR) into the computation of Fallback Rate (SOR).

Further fallbacks to Fallback Rate (SOFR) include any rate recommended by the Federal Reserve (Fed Recommended Rate), the Overnight Bank Funding Rate (OBFR) and the Federal Open Market Committee (FOMC) Target Rate.

**Calculation Procedure for 1M, 3M and 6M Fallback Rates (SOR) in the event of a permanent discontinuation of Fallback Rate (SOFR):**

For avoidance of doubt, in the event of a permanent discontinuation of Fallback Rate (SOFR), the calculation methodology for 1-month, 3-month and 6-month Fallback Rates (SOR) shall remain unchanged except that the USD Rate is replaced by the applicable contractual fallback rate to Fallback Rate (SOFR). The publication time of the Fallback Rate (SOR) may differ depending on the publishing time of the Fed Recommended Rate, OBFR or FOMC Target Rate (as the case may be).

## Annex A:

### **General Approach to Fallback Rate (SOR) Publication**

- The intention is to have a Fallback Rate (SOR) made available for:
  - every Singapore, London and New York Business Day on which an Overnight SOR would have been published; and
  - every Singapore and London Business Day on which a 1-month, 3-month and 6-month SOR would have been published;also known as “Original SOR Rate Record Day” and “Original SOR Fixing Day”<sup>4</sup>. There shall only be one Fallback Rate (SOR) for each tenor corresponding to a particular Original SOR Rate Record Day.
- The 1-month, 3-month and 6-month Fallback Rate (SOR) will be published with an approximately 1-month, 3-month or 6-month lag, respectively. This is because Fallback Rate (SOFR) is published in-arrears and would only be available after the accrual period. Overnight Fallback Rate (SOR) will use SOFR published by Federal Reserve Bank of New York directly in replacement of overnight USD LIBOR with a delayed publication on T+1.
- Publication of Fallback Rate (SOR) for that unique Original SOR Rate Record Day, after accounting for the lag, will be on a day that is two Singapore Business Days before the earliest Period End Date<sup>5</sup> that requires this Fallback Rate (SOR) for payment and settlement purposes. Fallback Rates (SOR) will be published at 9.15am New York time (9.15pm or 10.15pm Singapore time), following shortly after SOFR publication by Federal Reserve

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<sup>4</sup> “Original SOR Fixing Day”, as defined in the updated 2006 ISDA Definitions, means in respect of a Reset Date, the day that is two Singapore and London Business Days preceding that Reset Date. It is also the Trade Date of the underlying USD/SGD FX swaps.

<sup>5</sup> “SGD SOR Interest Rate Swap (IRS)” refers to a standard SGD interest rate swap transaction where the interest payment date(s) occur on good Singapore Business Days, subject to adjustment in accordance with Modified Following Business Day Convention (as defined in the 2006 ISDA Definitions). In this context, the “earliest Period End Date” refers to a good Singapore Business Day, subject to adjustment in accordance with Modified Following Business Day Convention, that is 1 (one), 3 (three) or 6 (six) calendar months after the earliest Reset Date (which is yet to be adjusted in accordance with any Business Day Convention), such that the Original SOR Rate Record Day would be two Singapore and London Business Day prior to this earliest Reset Date. For example, for an Original SOR Rate Record Day of 18 February 2021 (Thursday), the earliest Reset Date prior to any Business Day Convention adjustment is 20 February 2021 (Saturday). Accordingly, the “earliest Period End Date” for Fallback Rate (SOR) with Original SOR Rate Record Day 18 February 2021 (Thursday) is 1 (one), 3 (three) or 6 (six) calendar months after 20 February 2021 (Saturday), subject to adjustments in accordance with Modified Following Business Day Convention. For avoidance of doubt, the earliest Period End Dates in the example are 22 March 2021 (1-month, adjusted in accordance with Modified Following Business Day Convention from 20 March 2021 Saturday), 20 May 2021 (3-month) and 20 August 2021 (6-month).

Bank of New York and Bloomberg's usual publication timing for Fallback Rate (SOFR). Each Fallback Rate (SOR) published will be tagged to a unique Original SOR Rate Record Day.

- Where available on the date of Fallback Rate (SOR) publication, the Fallback Rate (SOFR) with Original IBOR Rate Record Day matching the Original SOR Rate Record Day, will be used. If the Fallback Rate (SOFR) with Original IBOR Rate Record Day matching the Original SOR Rate Record Day is unavailable on the date of Fallback Rate (SOR) publication, then the Fallback Rate (SOFR) with the latest Original IBOR Rate Record Day for the same tenor will be used.
- It is possible for multiple Fallback Rates (SOR) of the same tenor to be published on the same day, with each Fallback Rate (SOR) tagged to a unique Original SOR Rate Record Day. Likewise, there could also be good Singapore Business Days when no Fallback Rate (SOR) will be published.

### **Illustration of Fallback Rate (SOR) publication date with respect to conventional SOR Interest Rate Swap period end dates**

Assuming we are seeking the 6-month Fallback Rate (SOR) for an SGD SOR IRS that resets semi-annually on every 20<sup>th</sup> of February and August, for the IRS period starting 22 February 2021 (as 20 February 2021 is a non-Singapore Business Day, the IRS Period Start Date is shifted to 22 February 2021) and ending 20 August 2021, the Original SOR Rate Record Day (Original SOR Fixing Day) would have been on 18 February 2021. A 6-month Fallback Rate (SOR) would be needed on 18 August 2021, two Singapore Business Days prior to the SOR IRS Period End Date, 20 August 2021. This example is illustrated in Figure 1 below.

In order to produce the 6-month Fallback Rate (SOR) on 18 August 2021, the inputs i.e. the relevant FX forward points and spot rate and Fallback Rate (SOFR) required are:

1. The USD/SGD FX forward points and spot rate from Original SOR Rate Record Day, 18 February 2021, will be used to compute Fallback Rate (SOR) – these are the same FX data points that would have been used to calculate the 18 February 2021 6-month SGD SOR. The underlying



USD/SGD FX swaps will be traded on 18 February 2021 with FX Swap Value Date on 22 February 2021 and FX Swap Maturity Date on 23 August 2021 (as 22 August 2021 is a non-Business Day, the maturity date is shifted to 23 August 2021).

2. The Fallback Rate (SOFR) corresponding to the Original IBOR Rate Record Day 18 February 2021, published by Bloomberg, is expected to be computed using:
  - o 6-month Adjusted SOFR<sup>6</sup> – compounding the daily SOFR observations over the business days from Accrual Start Date<sup>7</sup> on 18 February 2021 to Accrual End Date on 18 August 2021. The final SOFR observation on 17 August 2021 will be published by Federal Reserve Bank of New York on 18 August 2021 at 8:00am New York time (8pm/9pm Singapore time) and the 6-month Adjusted SOFR will be published within 45 minutes of the SOFR publication.
  - o Spread adjustment will be calculated using a historical median approach over a five-year lookback period<sup>8</sup>. This Spread adjustment for that tenor will be fixed upon the first to occur of (i) an announcement of discontinuation of that USD LIBOR tenor, or (ii) announcement that USD LIBOR for that tenor will be non-representative at a future date.

With the above inputs, the Fallback Rate (SOR) for Original SOR Rate Record Day 18 February 2021 will be calculated and published by 9:15am New York time (9:15pm/10:15pm Singapore time) on 18 August 2021. Interest payments for contracts that use the 18 February 2021 6-month SGD SOR would typically be due no earlier than 20 August 2021.

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<sup>6</sup> “Adjusted SOFR” refers to the rate after compounding SOFR for the relevant accrual period.

<sup>7</sup> In Bloomberg’s IBOR Fallback Rate Adjustments Rule Book (last updated 22 April 2020),

- “Accrual Start Date” means, with respect to an IBOR, its Reference Rate, Tenor and a Rate Record Day, the Reference Rate Business Day that is the Offset Lag [means 2 (two)] number of Reference Rate Business Days immediately prior to the Accrual Spot Date.
- “Accrual End Date” means, with respect to an IBOR, its Reference Rate, Tenor and a Rate Record Day, if such Tenor is ‘1 Month’, ‘3 Months’ and ‘6 Months’, the Modified Following Convention Date with respect to the day that is 1 (one), 3 (three) or 6 (six) calendar months immediately succeeding the Accrual Start Date, respectively.

< <https://data.bloomberglp.com/professional/sites/10/IBOR-Fallback-Rate-Adjustments-Rule-Book.pdf> >

<sup>8</sup> See Summary of responses to the ISDA Consultation on Final Parameters for the Spread and Term Adjustment (15 November 2019), <<https://www.isda.org/a/935TE/2019.11.15-ISDA-Final-Parameters-Consultation-Report.pdf>>

Figure 1 - 20<sup>th</sup> Roll

17 Feb 2021	18 Feb 2021	19 Feb 2021	20 Feb 2021	21 Feb 2021	22 Feb 2021	...	16 Aug 2021	17 Aug 2021	18 Aug 2021	19 Aug 2021	20 Aug 2021	21 Aug 2021	22 Aug 2021	23 Aug 2021	24 Aug 2021
Wed	Thu	Fri	Sat	Sun	Mon	...	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue
	Original SOR Rate Record Day Original SOR Fixing Day		Weekend		SOR IRS Period Start Date SOR IRS Reset Date	...					SOR IRS Period End Date	Weekend			
USD/SGD FX Forward Points and Spot Rate published on Original SOR Rate Record Day, 18 Feb 2021, to be used in 18 Aug 2021 Fallback Rate (SOR) computation															
	USD/SGD FX Swap Trade Date				USD/SGD FX Swap Value Date	...									USD/SGD FX Swap Maturity Date
6M Adjusted SOFR Observation Period from 18 Feb 2021 to 17 Aug 2021 to be published on 18 Aug 2021															
	Adjusted SOFR Accrual Start Date Original IBOR Rate Record Day				Adjusted SOFR Accrual Spot Date	...					Adjusted SOFR Accrual End Date & 6M Fallback Rate (SOFR) Publication Date				
Fallback Rate (SOR) calculated and published on 18 Aug 2021 corresponding to Original SOR Rate Record Day, 18 Feb 2021															
						...					6M Fallback Rate (SOR) Publication Date, 2 Singapore Business Days before SOR IRS Period End Date (20 Aug 2021)				

Figure 2 demonstrates the applicability of the 6-month Fallback Rate (SOR) for Original SOR Rate Record Day 18 February 2021 to SGD SOR IRS that reset semi-annually on every 21<sup>st</sup> and 22<sup>nd</sup> of February and August.

These examples seek to show that there will only be one Fallback Rate (SOR) for each tenor corresponding to a particular Original SOR Rate Record Day and there can be good Singapore Business Days where no Fallback Rate (SOR) will be published.

- Semi-annual resets on every 21<sup>st</sup> of February and August

For the IRS period starting 22 February 2021 and ending 23 August 2021 (as 21 February 2021 and 21 August 2021 are non-Singapore Business Days, the IRS Period Start and End Dates are shifted to 22 February 2021 and 23 August 2021 respectively), the Original SOR Rate Record Day (Original SOR Fixing Date) would have been on 18 February 2021. While two Singapore Business Days prior to the SOR IRS Period End Date 23 August 2021 is 19

August 2021, there will be no publication of a 6-month Fallback Rate (SOR) since the Fallback Rate (SOR) corresponding to Original SOR Rate Record Day 18 February 2021 had been published on 18 August 2021.

- Semi-annual resets on every 22<sup>nd</sup> of February and August

For the IRS period starting 22 February 2021 and ending 23 August 2021 (as 22 August 2021 is a non-Singapore Business Day, the IRS Period End Date is shifted to 23 August 2021), the Original SOR Rate Record Day (Original SOR Fixing Day) would have been on 18 February 2021. While two Singapore Business Days prior to the SOR IRS Period End Date 23 August 2021 is 19 August 2021, there will be no publication of a 6-month Fallback Rate (SOR) since the Fallback Rate (SOR) corresponding to Original SOR Rate Record Day 18 February 2021 had been published on 18 August 2021.

**Figure 2 - 21<sup>st</sup> and 22<sup>nd</sup> Rolls**

17 Feb 2021	18 Feb 2021	19 Feb 2021	20 Feb 2021	21 Feb 2021	22 Feb 2021	...	16 Aug 2021	17 Aug 2021	18 Aug 2021	19 Aug 2021	20 Aug 2021	21 Aug 2021	22 Aug 2021	23 Aug 2021	24 Aug 2021
Wed	Thu	Fri	Sat	Sun	Mon	...	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue
	Original SOR Rate Record Day Original SOR Fixing Day		Weekend		SOR IRS Period Start Date SOR IRS Reset Date	...						Weekend		SOR IRS Period End Date	
USD/SGD FX Forward Points and Spot Rate published on Original SOR Rate Record Day, 18 Feb 2021, to be used in 18 Aug 2021 Fallback Rate (SOR) computation															
	USD/SGD FX Swap Trade Date				USD/SGD FX Swap Value Date	...								USD/SGD FX Swap Maturity Date	
6M Adjusted SOFR Observation Period from 18 Feb 2021 to 17 Aug 2021 to be published on 18 Aug 2021															
	Adjusted SOFR Accrual Start Date Original IBOR Rate Record Day				Adjusted SOFR Accrual Spot Date	...			Adjusted SOFR Accrual End Date & 6M Fallback Rate (SOFR) Publication Date						
Fallback Rate (SOR) calculated and published on 18 Aug 2021 corresponding to Original SOR Rate Record Day, 18 Feb 2021															
						...			6M Fallback Rate (SOR) Publication Date	No 6M Fallback Rate (SOR) will be published on 19 Aug 2021. There shall only be one 6M Fallback Rate (SOR) corresponding to an Original SOR Rate Record Day, 18 Feb 2021, which had been published on 18 Aug 2021.					

## Annex B: Calculation of 6-month Fallback Rate (SOR)

FX Trade Date	FX Value Date	FX Maturity Date	Spot Rate	Forward Points	Principal (in USD)	SGD Principal	Term	Daycount	Method: VWAP of Spot Rate and VWAP of Forward Points	
									Weighted Spot (=Spot Rate <sub>i</sub> * SGD Principal <sub>i</sub> )	Weighted Forward Points (=Forward Point <sub>i</sub> * SGD Principal <sub>i</sub> )
22-Oct-19	24-Oct-19	24-Apr-20	1.36155	-0.002950	146,890,000	199,998,079.50	6 Months	183	272,307,385.14	-589,994.33
22-Oct-19	24-Oct-19	24-Apr-20	1.36155	-0.002950	36,720,000	49,996,116.00	6 Months	183	68,072,211.74	-147,488.54
22-Oct-19	24-Oct-19	24-Apr-20	1.36175	-0.002950	58,750,000	80,002,812.50	6 Months	183	108,943,829.92	-236,008.30
22-Oct-19	24-Oct-19	24-Apr-20	1.3617	-0.002950	73,440,000	100,003,248.00	6 Months	183	136,174,422.80	-295,009.58
22-Oct-19	24-Oct-19	24-Apr-20	1.36145	-0.002950	50,000,000	68,072,500.00	6 Months	183	92,677,305.13	-200,813.88
22-Oct-19	24-Oct-19	24-Apr-20	1.3619	-0.002900	36,710,000	49,995,349.00	6 Months	183	68,088,665.80	-144,986.51
22-Oct-19	24-Oct-19	24-Apr-20	1.3619	-0.002900	50,000,000	68,095,000.00	6 Months	183	92,738,580.50	-197,475.50
<b>Total</b>						<b>616,163,105</b>	<b>Total</b>		<b>839,002,401.03</b>	<b>-1,811,776.64</b>
							Volume Weighted Average of Spot Rate <sub>i</sub>		"Spot Rate" in the formula (This value is published at 4.45pm Singapore time on 22 Oct 2019)	<b>1.3617</b>
							Volume Weighted Average of Forward Point <sub>i</sub>		"Forward Points" in the formula (This value is published at 4.45pm Singapore time on 22 Oct 2019)	<b>-0.002940419</b>

"SGD Aggregate Principal"

### Fallback SOFR to be used:

Original SOR Rate Record Date	SOR IRS Reset Date	SOR IRS Period End Date	Publication of 6M Fallback Rate (SOR)
22-Oct-19	24-Oct-19	24-Apr-20	22-Apr-20

← 2 Singapore Business Days before SOR IRS Period End Date (24 Apr 2020)

Original USD LIBOR Rate Record Date	Fallback Rate (SOFR) Accrual Spot Date	Fallback Rate (SOFR) Accrual Start Date	Fallback Rate (SOFR) Accrual End Date	Publication of 6M Fallback Rate (SOFR)
22-Oct-19	24-Oct-19	22-Oct-19	22-Apr-20	22-Apr-20

Original USD LIBOR Rate Record Date	6M Adjusted SOFR	6M Spread Adjustment	6M Fallback Rate (SOFR)
22-Oct-19	1.24623	0.31771	1.56394

← Source: Bloomberg IBOR Fallback Test Data

### Calculation of 6-month Fallback SOR to be published on 22 Apr 2020

'USD Rate' on 22 Apr 2020 = 1.56394 %  
 '#days' = 183  
 'Spot Rate' from 22 Oct 2019 = 1.3617  
 'Forward Points' from 22 Oct 2019 = -0.002940419

$$\begin{aligned}
 \text{Fallback SOR} &= \left\{ \left( \frac{\text{Spot Rate} + \text{Forward Points}}{\text{Spot Rate}} \right) \times \left( 1 + \frac{\text{USD Rate} \times \# \text{ days}}{360} \right) - 1 \right\} \times \frac{365}{\# \text{ days}} \times 100 \\
 &= \left\{ \left( \frac{1.3617 + (-0.002940419)}{1.3617} \right) \times \left( 1 + \frac{1.56394\% \times 183}{360} \right) - 1 \right\} \times \frac{365}{183} \times 100
 \end{aligned}$$

= 1.15154 % ← To be published at 9.15am New York time (9.15pm/10.15pm Singapore time) on 22 Apr 2020

## **Annex C:**

### **Fallback Rate (SOR) Publication Schedule**

To facilitate users' understanding and awareness, the Fallback Rate (SOR) publication schedule for Original SOR Rate Record Days, up to one year in advance, is accessible on Refinitiv's platform using the RICs listed below, following the convention of selecting the two-character tenor identifier (e.g. ON, 1M, 3M or 6M) and numerical month a user wishes to view.

The publication schedule will be updated on a rolling basis – the respective page would be updated with the new dates within the first week of the last publication date for a particular month where the latest dates will overwrite the past dates on the same page for the same month. For example, the scheduled dates for January 2020 for the 6-month Fallback Rate (SOR) publication will be overwritten with the scheduled dates for January 2021 under the same Page Code < FBKSOR6MACAL1> within the first week after 30 July 2020 (this being the last 6M Fallback Rate (SOR) publication date for Original SOR Rate Record Day 30 January 2020). The dates in the publication schedule are arranged by Original SOR Rate Record Day.

List of Refinitiv Page Codes for Fallback Rate (SOR) Publication Schedule

Month	ON	1M	3M	6M
January	FBKSORONACAL1*	FBKSOR1MACAL1	FBKSOR3MACAL1	FBKSOR6MACAL1
February	FBKSORONACAL2	FBKSOR1MACAL2	FBKSOR3MACAL2	FBKSOR6MACAL2
March	FBKSORONACAL3	FBKSOR1MACAL3	FBKSOR3MACAL3	FBKSOR6MACAL3
April	FBKSORONACAL4	FBKSOR1MACAL4	FBKSOR3MACAL4	FBKSOR6MACAL4
May	FBKSORONACAL5	FBKSOR1MACAL5	FBKSOR3MACAL5	FBKSOR6MACAL5
June	FBKSORONACAL6	FBKSOR1MACAL6	FBKSOR3MACAL6	FBKSOR6MACAL6
July	FBKSORONACAL7	FBKSOR1MACAL7	FBKSOR3MACAL7	FBKSOR6MACAL7
August	FBKSORONACAL8	FBKSOR1MACAL8	FBKSOR3MACAL8	FBKSOR6MACAL8
September	FBKSORONACAL9	FBKSOR1MACAL9	FBKSOR3MACAL9	FBKSOR6MACAL9
October	FBKSORONACAL10	FBKSOR1MACAL10	FBKSOR3MACAL10	FBKSOR6MACAL10
November	FBKSORONACAL11	FBKSOR1MACAL11	FBKSOR3MACAL11	FBKSOR6MACAL11
December	FBKSORONACAL12	FBKSOR1MACAL12	FBKSOR3MACAL12	FBKSOR6MACAL12

\*"1" to "12" denotes the numerical month in the year e.g. 1 = January; 8 = August; 12 = December

## Fallback Rate (SOR) Historical Data

Historical Fallback Rate (SOR) data series will be available from the commencement of the Fallback Rate (SOR) publication in Q3 2020<sup>9</sup>. In order to access the historical data, a user has to input “PRICE HISTORY” in Eikon’s Search Bar (Figure 3) and further input the relevant RIC code for Fallback Rate (SOR) in the application (Figure 4) to retrieve the historical data the user is looking for.

### List of RIC Codes for Fallback Rate (SOR)

Tenor	RIC Code
ON Fallback Rate (SOR)	<FBKSORONF=ABSG>
1M Fallback Rate (SOR)	<FBKSOR1MF=ABSG>
3M Fallback Rate (SOR)	<FBKSOR3MF=ABSG>
6M Fallback Rate (SOR)	<FBKSOR6MF=ABSG>

Figure 3

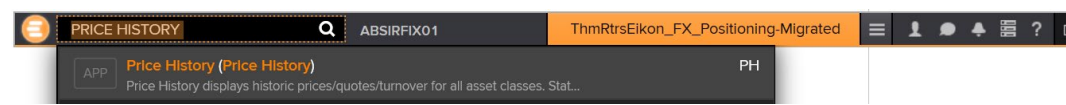
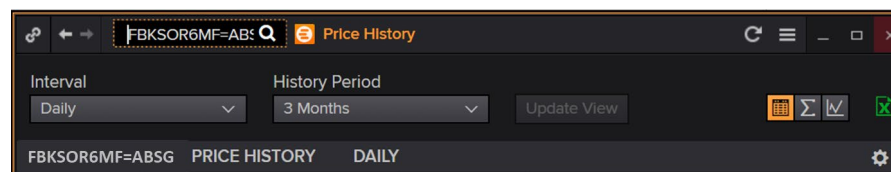


Figure 4



<sup>9</sup> In addition, the back-dated Fallback Rate (SOR) historical series from the start date of Fallback Rate (SOFR) publication on 17 July 2020 would also be made available.

## **Annex D: Fallback Rate (SOR) Restatement/Re-fix Policy**

The production of Fallback Rate (SOR) is dependent on the publications of SOFR by Federal Reserve Bank of New York and Fallback Rate (SOFR) by Bloomberg. The table below illustrates the publication time and restatement/re-fix policies across the various benchmarks.

Differences in	SOFR	Fallback Rate (SOFR)	Fallback Rate (SOR)
Publication time	08:00pm/09:00pm SGT (08:00am EST/EDT)	Bloomberg anticipates that, under normal circumstances, Fallback Rate (SOFR) will be published within 45 minutes of the publication of SOFR i.e. 8:45am New York time (08:45pm/09:45pm SGT). <sup>10</sup>	09:15pm/10:15pm SGT [09:15am New York time, within 30 minutes of Bloomberg's publication of all-in fallback rate i.e. Fallback Rate (SOFR)]
Restatement/re-fix window	02:30am/03:30am SGT (02:30pm EST/EDT)	The cut-off time for the publication of the Fallback Rate (SOFR) is 2.5 hours after the SOFR publication i.e. 10:30am New York time (10:30pm/11:30pm SGT). Any publication of the Fallback Rate (SOFR) after the cut-off time, including any restatement of a previously published Fallback Rate (SOFR), will be ignored. <sup>11</sup>	9:00am SGT on the following day (08:00pm/09:00pm New York time)

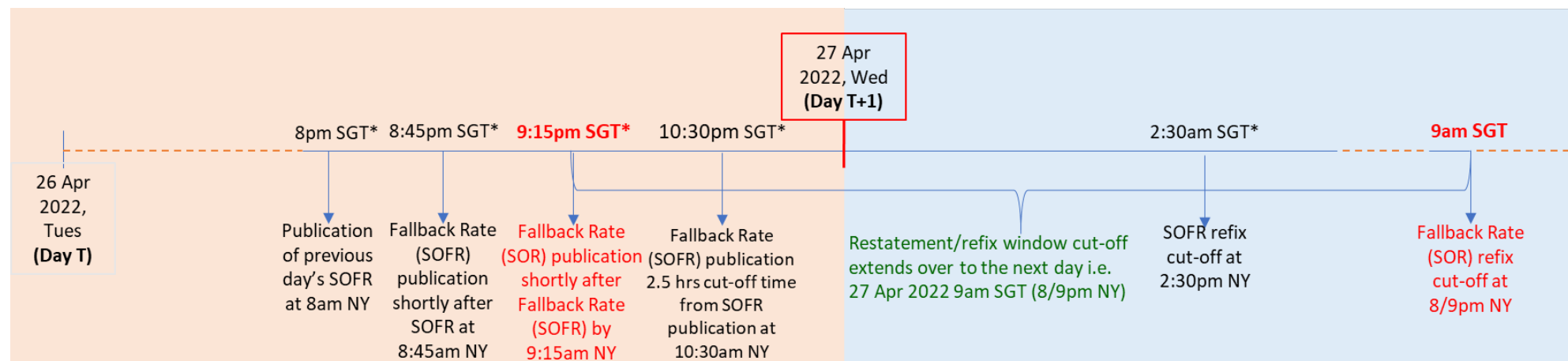
<sup>10</sup> Refer to Bloomberg's Frequently Asked Questions on IBOR Fallback Rate Adjustments version as at 21 July 2020, Question 14 on times of the day where fallback data will be published, <[https://data.bloomberglp.com/professional/sites/10/Frequently-Asked-Questions-on-IBOR-Fallback-Adjustments\\_200721.pdf](https://data.bloomberglp.com/professional/sites/10/Frequently-Asked-Questions-on-IBOR-Fallback-Adjustments_200721.pdf)>

<sup>11</sup> Refer to Bloomberg's Frequently Asked Questions on IBOR Fallback Rate Adjustments version as at 21 July 2020, Question 15 on time at which the fallback rate shall be effective on its publication date, <[https://data.bloomberglp.com/professional/sites/10/Frequently-Asked-Questions-on-IBOR-Fallback-Adjustments\\_200721.pdf](https://data.bloomberglp.com/professional/sites/10/Frequently-Asked-Questions-on-IBOR-Fallback-Adjustments_200721.pdf)>

Figure 5 illustrates the publication of Fallback Rate (SOR) that will take place within 30 minutes of Fallback Rate (SOFR) publication by 09:15am New York time (09:15pm/10:15pm Singapore time). The Fallback Rate (SOR) restatement/re-fix window cut-off shall be at 9:00am Singapore time on the following day, taking in the corrected SOFR that was restated at 02:30pm New York time for ON Fallback Rate (SOR) and the Fallback Rate (SOFR) publication cut-off time of 2.5 hours after the SOFR publication on the same day at 10:30am New York time for 1-month, 3-month and 6-month Fallback Rate (SOR).

Note: Any corrections to USD/SGD swap points and spot rate remains the same i.e. 90minutes from publication time, 4.45pm Singapore time on the day, 1-month, 3-month, or 6-month prior.

Figure 5



\*These timings converted from New York time to Singapore time do not account for periods where daylight savings are implemented in New York. During daylight savings, the Singapore timings will be adjusted by +1-hour e.g. 8pm SGT will be 9pm SGT.